

CHIGNIK MANAGEMENT AREA, 1995

COMMERCIAL SALMON FISHERY MANAGEMENT REPORT
TO THE
ALASKA BOARD OF FISHERIES

By

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and
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INTRODUCTION

Background

The Chignik Management Area (CMA) includes all coastal waters and inland drainages of the northwest Gulf of Alaska between Kilokak Rocks and Kupreanof Point on the Alaska Peninsula (Figure 1). This area is bordered by the Alaska Peninsula Management Area to the west and the Kodiak Management Area to the east. The CMA includes approximately 117 salmon producing streams, the most important being the Chignik River system. The major features in this watershed are two large, interconnected lakes; Black and Chignik Lake, with a single outlet which empties into a nearly enclosed estuary, Chignik Lagoon (Figure 2).

The CMA is divided into five districts which are, from east to west, the Eastern, Central, Chignik Bay, Western, and Perryville Districts (Figure 3). The villages of Chignik Lake, Chignik Lagoon, City of Chignik, Perryville, and Ivanof Bay depend on commercial and subsistence salmon (Figure 4). Although permit holders or crew members reside in all the villages, shoreside processing capacity is centered in the City of Chignik. At present, these villages derive very little commerce from the sport fishery and harvests are relatively low.

Five species of Pacific Salmon are commercially harvested: chinook *Oncorhynchus tshawytscha*, sockeye *O. nerka*, pink *O. gorbuscha*, chum *O. keta*, and coho *O. kisutch* salmon. Purse seines are the only legal commercial gear type allowed to harvest these species within the CMA. Up to 102 permits have been fished within the last 10-years (Figure 5).

Salmon management is based on the run strength of sockeye salmon in the Chignik-Black Lakes systems, and in June the Chignik Bay District opens concurrently with the Central and Eastern Districts. This management strategy has been approved by the State of Alaska Board of Fisheries and put into regulation as the Eastern District Management Plan (5 ACC 15.360). Openings in Districts outside of Chignik Lagoon during July, August, and early September depend not only on the run strength of pink, chum, and coho salmon but also on the run strength of sockeye to the Chignik Lakes system (Figure 6). After September 15, management shifts to insure that local subsistence needs are met.

Generally, although salmon stocks have increased in numbers post 1960, the fishery value has diminished in recent years (Figure 7, 8; Table 1, 2).

OVERVIEW OF THE 1995 SALMON SEASON

Unlike 1993 and 1994, no strike occurred in the Chignik Management Area during 1995. The season was also characterized by a high number of fishing days with the fishery open almost continuously from mid July through August (Table 3). Seiners were put on limits by the processors when processing capacity for pink salmon was exceeded. The season closed September 16 when the processors quit buying salmon. The total number of salmon caught during the 1995 season of 4,458,148 is the highest on record since 1960 (Table 1; Figure 7).

The 1995 harvests for all salmon species, except for chinook, were larger than forecasted and above the ten year average. Although the sockeye forecast approximated the overall harvest, preliminary inseason analysis indicates that the Black Lake harvest was smaller and the Chignik harvest was larger than expected. The pink harvest was approximately double the 1995 forecast (Table 4).

Chinook Salmon

Background

Chinook escapement in the CMA is limited primarily to the Chignik River system, the largest chinook system on the south side of the Alaska Peninsula (Table 5; Figure 2). Although there is no directed fishery within the CMA, Chinook salmon are harvested incidentally during the directed sockeye fishery. Chinook harvest and escapement occurs primarily during July and August, peaking in July.

Chinook runs (catch and escapement) have ranged from a low of 927 fish in 1974 to a high of 21,461 fish in 1993 (Table 6; Figure 9). The recent 10-year average run has been 10,573 fish. Commercial catches have increased from an average of 1,378 fish (1963-1972) to 6,934 (1986-1995). A corresponding increase in escapement has also occurred within the past ten years.

1995 Management

The 1995 chinook escapement of 4,288 was the fifth highest since 1963. However, chinook escapement counts are not adjusted for those removed by the sport fishery, and those that spawn below the counting weir, or those that escape after the weir is removed.

The CMA chinook harvest of 5,493 fish was the fifth highest since 1960 with 3,219 fish caught in Chignik Lagoon (Table 7). The harvest occurred from June 11 to September 10 with a peak on July 3 of 795 fish (Table 3). Chinook catches were approximately 1,500 lower than forecasted.

The total exvessel value of the 1995 chinook harvest was estimated at \$60,174, averaging \$602 per permit holder (Table 2; Figure 8).

Sockeye Salmon

Background

Economically, sockeye salmon are the most important commercial salmon species in the CMA. The commercial salmon fishery targets on two runs of sockeye salmon returning to the Chignik Lake and Black Lake systems. Sockeye salmon destined for the Chignik-Black Lakes system are also intercepted outside the CMA in two historic fisheries; one to the east in the Cape Igvak Section of the Kodiak Management Area (15% allocation through July 25); and one to the west

in the Southeastern District Mainland Section of the Alaska Peninsula Management Area (7% allocation through July 25) (Figure 1).

Narver (1966) estimated the sockeye salmon escapement goals for Black Lake at 400,000 and for Chignik Lake at 250,000. Commercial fishing time for sockeye salmon has been regulated based on achieving threshold escapements by specific dates for each run (Table 8). Achieving these thresholds is complicated by the run timing overlap (the transition period), which generally occurs during the latter part of June to early July. This is a critical time for management biologists who must assess the catch using age and stock composition to determine which stock dominates.

Scale pattern analysis (SPA), is currently used inseason and postseason for assigning sockeye salmon to the stock of origin. During the transition period, sampling effort is increased from once a week to every third day to assess the changing age and stock composition. Subsequently, fishing time may be increased to harvest early run fish or may be decreased to allow time for evaluating the late run strength.

Age composition of the early run is typically dominated by ages-1.3 and -1.2 fish, and the late run by ages-2.3 and -2.2. Historically, it is unusual for the early run to have many age-2.2 fish or the late run to have a very large percentage of age-1.2 fish (Conrad, 1983) (Table 9).

Aerial surveys have been conducted almost every year since 1960 and are used to determine spawning distribution of the sockeye escapement.

Since 1954, Sockeye runs (catch and escapement) have ranged from a low of 554,431 fish in 1954 to a high of 4,464,678 fish in 1984 (Table 10; Figure 10). Growth of the sockeye run seems to have stabilized because the most recent 10-year average run (1985-1994) of 2,681,270 fish has shown very little additional growth from the previous ten years, 1975 to 1984.

1995 Management

The Chignik River weir, located three miles upstream from Chignik Lagoon, was operational from June 1 until August 24; the latest date that salmon were counted through the weir since the late 1950s. Although this is the second year of using the underwater video cameras and tapping system, better placement within the river and the addition of another video camera, has improved the use of this new technology. Confidence in speciation was gained in separating coho, chinook, pink, and chum salmon from sockeye salmon. The 1995 estimated sockeye escapement of 686,020 does not include post weir counts (Table 11).

The commercial sockeye salmon fishery began on June 11 when the escapement exceeded 40,000 fish and was accompanied by a strong buildup in Chignik Lagoon as described by regulation. The fishery ended September 15 when the processors quit buying salmon because the fishery had been curtailed to two days a week to provide sockeye salmon for subsistence as described in the 1995 Chignik Area Management Plan.

In early July, inseason scale pattern analysis showed that the transition date would occur on July 5 and that Chignik Lake escapement had already surpassed the July 12 goal of 60,000 (Table 8, 11). Post July 5 the fishery was managed to harvest the last of the Black Lake run while

achieving second run escapement goals. During August sockeye were harvested surplus to the interim escapement goal of 50,000.

The CMA sockeye harvest of 1,724,357 fish was the highest harvest since 1991 with over 60% caught in Chignik Lagoon. (Table 1). The harvest occurred from June 11 to September 10 with a peak on June 21 of 92,239 fish (Table 3). The run rebounded twice late in the season when the run appeared to diminish; August 14 and August 25.

The total exvessel value of the 1995 sockeye harvest was estimated at \$11,969,210, averaging \$119,692 per permit holder (Table 2; Figures 5, 8).

Pink and Chum Salmon

Background

Pink and chum salmon production in the CMA is sporadic from year to year as shown by the variable escapements and calculated returns per spawner for both species (Tables 12, 13, 14, 15; Figures 11, 12). This could be attributed to the physical morphology of the river and stream systems, which are characterized by loose substrates and steep gradients. These systems are impacted by fall, winter, and spring floods which cause streambed scouring, and can result in high egg and fry mortality.

The CMA pink and chum salmon fisheries are managed based on inseason aerial assessment of escapement (Table 5), and catch per unit effort (CPUE) data. Currently, all salmon processed locally are for the fresh frozen market as there are no operational canning facilities. Consequently, to provide the quality required for fresh frozen processing, the fisheries are managed to intercept migrating fish prior to or just as they reach terminal waters.

Pink salmon catches have ranged from (post 1959 and excluding 1989) 25,472 in 1973 to 2,997,159 in 1988. Average catches as well as the run means have generally increased from the 1960s (Table 1, Figure 11).

From 1960 chum salmon catches have ranged from 8,717 in 1973 to 581,332 in 1981 (excluding 1989). Average catches as well as the run means have also generally increased from the 1960s (Table 1, Figure 12).

1995 Management

The 1995 CMA pink escapement of 3,432,008 was the highest since 1963. The largest escapement was to the Eastern District, but escapement was large to other Districts as well (Table 5; Figure 11).

Fishing was allowed almost continuously from mid July through August allowing for the second largest harvest recorded since 1960, with the largest catches coming from the Western District (Table 7). Peak pink catches were caught between July 31 and August 5 (Table 3).

The 1995 chum escapement of 347,538 was the seventh highest since 1962 (Figure 12). The largest escapement was to the Perryville District, but fair escapement was also distributed to other Districts (Table 5).

The 1995 chum catch of 381,202 was the sixth highest on record with most fish caught in the Western District (Table 7). Peak catches of 43,360 fish were on July 21 (Table 3).

The exvessel value of the pink and chum salmon harvest was \$977,811 and \$634,780 (Table 2; Figure 8). The average value per permit holder was \$9,778 for pink and \$6,347 for chum salmon (Table 2; Figure 5, 8).

Coho Salmon

Background

Coho salmon are present throughout the CMA, however the largest return is to the Chignik Lakes system. This is the largest coho run within the entire Westward Region.

Coho salmon first appear in the commercial fishery about mid-July and are still present when the fishery has closed in October. Post 1976, coho catches have ranged from 17,430 fish in 1977 to 370,420 in 1988 (Table 1). Commercial catches of coho have steadily increased throughout the CMA since the 1960s (Table 1; Figure 13). Recently, coho catch distributions have appeared bimodal with a peak in July during the targeted pink and chum fisheries, and a second one in late August - early September (Table 3).

1995 Management

A total of 281,830 coho salmon were harvested in the CMA in 1995, the fourth largest harvest since 1960. This catch was about 80,000 fish more than the harvest projection of 200,000 fish (Table 4). Coho catches were reported through mid-September in the Chignik Bay District, with a peak catches of 17,300 fish on July 17 and 11,047 fish on August 4 (Table 3).

The estimate of coho escapement to the Chignik Lakes system through August 24 was 874 fish. Post weir estimates are not available at present but average yearly coho escapement to the Chignik Lakes System is 84,337. Aerial surveys in the CMA in early September were nonexistent due to inclement weather conditions. Overall, escapement monitoring of coho salmon in the Chignik Area is sporadic due to the late timing of the run and logistics involved in monitoring the many streams in the area.

The exvessel value of the CMA coho salmon harvest was \$834,337. The average value per permit holder was \$8,343 (Table 2; Figure 8).

Subsistence

The CMA population centers of Chignik, Chignik Lake, Chignik Lagoon, Perryville and Ivanof Bay rely heavily on local resources for subsistence. Salmon subsistence permits are issued to people in these areas through the Kodiak and Chignik ADF&G offices, Village Public Safety Officers, and Subsistence personnel on assignment from the Anchorage ADF&G office. In 1994, 56% of the Chignik Area subsistence permits issued were returned. Subsistence harvests were estimated by expanding results from returned permits relative to total number of permits issued. In 1994, the CMA harvest was estimated at 165 chinook, 13,978 sockeye, 4055 coho, 1720 pink, and 382 chum salmon (Table 16).

LITERATURE CITED

- Conrad, R.H. 1983. Management applications of scale pattern analysis methods for the sockeye salmon runs to Chignik, Alaska. M.S. Thesis, Univ. Washington, Seattle.
- Johnson, B.A. and B. Barrett. 1988. Estimation of salmon escapement based on stream survey data: a geometric approach. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K88-35, Kodiak.
- Narver, D.W. 1966. Pelagial ecology and carrying capacity of sockeye salmon in the Chignik Lakes, Alaska. Ph.D. dissertation, Univ. Washington, Seattle. 348 pp.

Table 1. Commercial salmon catches in the Chignik Management Area by year, 1960-1995.^{ab}

Year	Number of Fish					Total
	Chinook	Sockeye	Coho	Pink	Chum	
1960	643	715,969	8,933	557,327	486,699	1,769,571
1961	409	322,890	3,088	443,510	178,760	948,657
1962	435	364,753	1,292	1,519,305	364,335	2,250,120
1963	1,744	408,606	9,933	1,662,363	112,697	2,195,343
1964	1,099	556,890	2,735	1,682,365	333,336	2,576,425
1965	1,592	599,553	9,602	1,118,158	120,589	1,849,494
1966	636	219,794	16,050	683,215	238,883	1,158,578
1967	882	462,000	13,150	108,981	75,543	660,556
1968	674	977,382	2,200	1,290,660	223,861	2,494,777
1969	3,448	394,135	18,103	1,779,736	67,721	2,263,143
1970	1,226	1,325,734	15,348	1,157,172	437,252	2,936,732
1971	2,010	1,016,136	14,557	612,290	353,952	1,998,945
1972	464	378,218	19,615	72,161	78,298	548,756
1973	525	870,354	22,322	25,472	8,717	927,390
1974	255	662,905	12,245	69,515	34,312	779,232
1975	549	399,593	53,283	66,165	25,161	544,751
1976	2,290	1,163,728	35,167	395,287	81,403	1,677,875
1977	710	1,972,207	17,430	604,806	110,452	2,705,605
1978	1,603	1,576,283	20,212	985,114	120,889	2,704,101
1979	1,253	1,049,497	99,129	1,905,198	188,907	3,243,984
1980	2,344	859,966	119,573	1,093,184	252,521	2,327,588
1981	2,694	1,839,469	78,805	1,162,613	580,332	3,663,913
1982	5,236	1,521,686	300,273	873,384	390,096	3,090,675
1983	5,488	1,824,175	61,927	321,178	159,412	2,372,180
1984	4,318	2,660,619	110,128	444,804	63,303	3,283,172
1985	1,888	922,151	191,188	160,128	22,806	1,298,161
1986	3,037	1,645,834	116,633	647,125	176,640	2,589,269
1987	2,651	1,898,838	150,414	246,775	127,261	2,425,939
1988	7,296	795,841	370,420	2,997,159	267,775	4,438,491
1989	3,542	1,159,287	68,233	27,712	1,624	1,260,398
1990	9,901	2,093,650	130,131	550,008	270,004	3,053,694
1991	3,157	1,895,665	165,625	1,169,248	261,096	3,494,791
1992	10,832	1,277,449	310,943	1,554,073	222,134	3,375,431
1993	19,515	1,697,351	229,459	1,648,397	122,360	3,717,082
1994	3,919	1,618,973	237,204	431,063	227,276	2,518,435
1995	5,493	1,724,357	281,830	2,065,266	381,202	4,458,148
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Avg (1966-95)	3,594	1,263,414	109,387	838,262	185,706	2,400,393
Avg (1976-95)	4,858	1,559,851	154,736	964,126	201,375	2,884,946
Avg (1986-95)	6,934	1,580,724	206,089	1,133,682	205,737	3,133,167

^a Catches do not include Cape Igvak or Southeastern District Mainland Area.

^b Catches (1970-1995) were updated using historical electronic fish ticket databases.

Table 2. Economic value of salmon and average income per commercial salmon permit holder, in dollars, in the Chignik Management Area, 1970-1995.

Year	Chinook		Sockeye		Coho		Pink		Chum		Total Value
	Total	Average	Total	Average	Total	Average	Total	Average	Total	Average	
1970	6,129	89	2,190,272	31,743	18,397	267	635,673	9,213	376,025	5,450	3,226,496
1971	6,472	84	2,034,279	26,419	23,240	302	366,693	4,762	326,760	4,244	2,757,444
1972	2,028	28	825,498	11,308	35,699	489	48,401	663	87,759	1,202	999,385
1973	5,255	72	3,030,057	41,508	73,663	1,009	20,610	282	10,180	139	3,139,765
1974	2,941	32	3,618,781	39,767	31,933	351	64,069	704	51,125	562	3,768,849
1975	6,561	76	1,384,271	16,240	213,539	2,581	104,115	12,211	61,704	717	1,770,190
1976	13,800	179	4,751,000	61,701	138,000	1,792	568,300	7,381	183,600	2,384	5,654,700
1977	18,828	212	14,553,720	163,525	104,819	1,178	920,881	10,347	368,066	4,136	15,966,314
1978	56,700	597	15,653,500	164,774	116,400	1,225	1,131,500	11,911	404,500	4,258	17,362,600
1979	32,050	317	11,345,503	112,332	710,192	7,031	2,622,269	25,963	126,866	1,256	14,836,880
1980	67,657	670	5,532,290	54,775	520,655	5,155	1,477,060	14,624	1,061,963	10,514	8,659,625
1981	75,231	730	17,262,119	167,593	439,900	4,271	1,881,334	18,265	2,431,421	23,606	22,090,005
1982	75,276	717	13,038,510	124,176	1,782,027	16,972	578,184	5,506	1,356,597	12,920	16,830,594
1983	96,159	962	10,728,088	107,281	219,650	2,197	240,171	2,402	421,713	4,217	11,705,781
1984	114,502	1,134	20,402,076	202,000	759,972	7,525	330,916	3,276	146,024	1,446	21,753,490
1985	67,088	664	7,997,834	79,186	1,471,418	14,568	140,076	1,387	59,475	589	8,735,891
1986	84,800	848	16,882,290	168,823	667,740	6,677	356,147	3,562	456,546	4,565	18,447,523
1987	72,739	706	24,783,033	240,612	1,035,129	10,050	269,868	2,620	339,819	3,299	26,500,588
1988	286,740	2,811	14,350,354	140,690	4,153,424	40,720	6,771,266	66,385	2,189,293	21,464	27,751,077
1989 ^a	78,999	790	13,047,378	130,474	436,892	4,369	32,994	3,299	4,745	47	13,601,008
1990	185,256	1,834	22,509,923	222,871	700,309	6,934	502,693	4,977	878,510	8,698	24,776,691
1991	50,027	486	11,002,784	106,823	650,626	6,317	402,916	3,912	502,860	4,882	12,609,213
1992	193,326	1,858	12,552,025	120,693	1,323,107	12,722	811,882	7,807	414,005	3,981	15,294,345
1993	175,690	1,722	8,210,106	80,491	730,622	7,163	637,666	6,252	184,012	1,804	9,938,096
1994	38,096	385	10,046,245	101,477	1,094,415	11,055	226,504	2,208	430,888	4,352	11,836,148
1995	60,174	602	11,969,210	119,692	834,337	8,343	977,811	9,778	634,780	6,347	14,476,312
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10-yr Average 1986-1995											
122,585			14,535,334		1,162,660		1,098,974		603,546		17,523,100

^a Year of the oil spill.

Table 3. Salmon catch and effort by day in the Chignik Management Area, 1995.

Date MM/DD	Fishing Effort		Chinook		Sockeye		Coho		Pink		Chum		Total	
	Permits	Landings	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
6/08 ^a	1	1	0	0	951	5,931	0	0	0	0	0	0	951	5,931
6/10 ^a	1	1	0	0	2,826	18,175	0	0	0	0	0	0	2,826	18,175
6/11	78	80	25	521	53,309	346,485	0	0	18	79	1,217	8,782	54,569	355,867
6/12	76	83	46	808	42,973	272,604	0	0	4	16	1,566	12,390	44,589	285,818
6/13	81	94	94	2,126	39,368	246,575	0	0	34	86	710	5,316	40,206	254,103
6/14	75	76	54	1,283	30,764	196,986	0	0	48	148	1,466	10,368	32,332	208,785
6/15	78	86	45	827	30,608	184,957	2	15	87	281	1,380	9,774	32,122	195,854
6/16	75	75	10	160	16,495	104,869	5	35	41	129	539	4,001	17,090	109,194
6/18 ^a	1	1	0	0	1,275	8,289	0	0	0	0	0	0	1,275	8,289
6/20 ^a	1	1	0	0	3,070	19,882	0	0	0	0	0	0	3,070	19,882
6/21	88	96	86	1,934	92,239	598,030	6	32	274	808	2,666	19,188	95,271	619,992
6/22	77	79	22	460	31,743	203,392	5	26	119	358	1,774	12,994	33,663	217,230
6/24	82	82	64	1,167	39,462	252,665	9	51	226	632	781	6,194	40,542	260,709
6/25	97	102	83	1,493	55,242	342,221	17	106	742	2,266	2,880	21,949	58,964	368,035
6/30 ^a	1	1	0	0	901	5,397	0	0	0	0	0	0	901	5,397
7/03	89	94	795	17,645	46,348	301,063	10	57	268	670	2,169	17,893	49,590	337,328
7/04	83	85	189	4,381	29,771	190,689	20	114	575	1,619	11,759	88,347	42,314	285,150
7/05	94	96	465	11,537	28,917	185,320	88	630	1,062	3,514	19,783	149,492	50,315	350,493
7/06	81	81	257	6,021	28,487	185,780	32	203	1,184	3,564	8,352	56,702	38,312	252,270
7/07	90	91	297	7,519	23,256	149,182	214	1,335	1,143	3,620	3,641	28,477	28,551	190,133
7/08	82	84	192	4,443	24,085	158,059	268	1,829	1,136	3,548	3,357	27,295	29,038	195,174
7/09	84	89	253	6,363	24,453	164,651	94	642	975	3,265	3,175	24,109	28,950	199,030
7/10	72	72	80	1,699	12,910	87,637	191	1,319	732	2,361	2,181	18,282	16,094	111,298
7/14	64	67	123	2,989	32,381	226,322	105	630	447	1,616	561	4,366	33,617	235,923
7/15	87	106	301	6,074	58,386	397,370	9,532	56,856	22,693	68,981	11,684	85,463	102,596	614,744
7/16	89	97	257	5,183	52,891	361,269	9,570	60,604	31,361	101,144	14,514	107,586	108,593	635,786
7/17	93	104	438	5,657	45,038	301,767	17,300	117,416	53,979	178,404	23,871	171,829	140,626	775,073
7/20	91	94	281	4,965	54,613	373,691	9,342	60,392	58,464	189,988	21,783	160,183	144,483	789,219
7/21	87	88	243	3,108	25,717	174,035	8,014	52,451	63,288	207,749	43,360	313,232	140,622	750,575
7/22	90	96	89	1,437	45,465	312,340	1,896	12,295	28,898	102,561	10,241	75,590	86,589	504,223
7/23	87	91	77	1,248	23,869	162,315	2,292	15,038	19,256	68,024	7,460	54,000	52,954	300,625
7/24	81	82	54	710	20,658	141,669	665	4,575	12,583	42,850	3,477	26,258	37,437	216,062
7/25	73	74	16	284	15,337	104,406	238	1,548	10,007	36,085	1,697	12,519	27,295	154,842
7/27	53	53	23	531	14,497	99,706	63	412	2,308	8,514	516	4,000	17,407	113,163
7/28	95	98	81	1,265	27,390	186,619	6,251	41,949	82,598	284,005	13,153	94,934	129,473	608,772
7/29	87	90	76	1,206	21,129	144,473	7,982	55,024	98,807	350,855	16,020	116,710	144,014	668,268
7/30	86	91	96	1,297	19,823	133,536	6,861	48,485	132,954	454,140	14,641	107,488	174,375	744,946
7/31	83	86	32	561	22,931	142,833	8,887	53,614	159,352	585,712	17,903	124,490	209,105	907,210
8/01	76	79	28	591	19,329	130,255	6,037	43,556	142,085	500,219	13,902	104,097	181,381	778,718
8/02	84	84	27	517	12,661	85,895	6,437	45,534	66,762	242,279	11,408	84,431	97,295	458,656
8/04	82	87	17	230	20,420	137,259	11,047	70,825	152,799	563,668	9,423	68,885	193,706	840,867
8/05	74	82	33	465	12,989	87,179	9,900	73,326	134,096	475,600	7,411	56,461	164,429	693,031
8/06	71	76	27	259	11,903	79,263	6,341	42,482	77,889	305,714	6,954	54,270	103,114	481,988
8/07	65	69	6	150	14,031	95,929	1,549	11,639	45,972	169,581	4,031	31,698	65,589	308,997
8/08	68	70	16	292	11,465	78,356	4,376	31,278	41,949	147,839	4,061	30,738	61,867	288,503
8/09	45	46	9	189	8,462	56,631	4,095	30,433	46,932	163,353	3,407	25,956	62,905	276,562
8/10	66	69	11	191	13,113	89,363	3,700	26,748	70,364	262,702	3,793	28,680	90,981	407,684

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Table 3. (page 2 of 2)

Date MM/DD	Fishing Effort		Chinook		Sockeye		Coho		Pink		Chum		Total	
	Permits	Landings	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
8/11	68	74	3	53	16,625	113,326	4,682	34,402	115,079	418,611	5,781	44,653	142,170	611,045
8/14	73	77	7	102	28,438	198,803	6,071	42,622	44,699	168,457	3,975	29,588	83,190	439,572
8/15	78	80	15	213	25,261	174,830	8,127	59,550	62,154	225,482	5,857	45,962	101,414	506,037
8/16	75	77	9	190	19,410	134,708	7,321	51,817	47,749	174,653	5,425	41,620	79,914	402,988
8/17	67	69	3	90	16,753	117,069	5,573	39,070	42,528	155,622	3,961	30,237	68,818	342,088
8/18	56	58	5	109	15,288	107,041	2,352	17,994	22,190	82,820	1,395	10,366	41,230	218,330
8/19	44	44	3	52	13,384	94,547	2,688	21,303	17,324	64,960	1,285	11,207	34,684	192,069
8/20	47	49	1	19	11,949	81,558	2,637	20,483	19,293	72,165	1,309	10,110	35,189	184,335
8/21	59	60	3	61	15,203	105,925	4,827	38,162	15,686	57,536	1,464	10,991	37,183	212,675
8/22	61	65	0	0	12,417	87,026	2,276	17,733	4,874	19,165	638	4,452	20,205	128,376
8/23	58	59	1	14	12,743	89,891	2,281	18,090	5,225	21,233	682	4,894	20,932	134,122
8/24	61	70	3	60	18,649	131,385	2,925	22,845	7,689	28,923	832	6,261	30,098	189,474
8/25	60	67	1	26	22,971	160,063	3,090	24,218	12,278	45,964	1,264	9,727	39,604	239,998
8/26	63	67	3	44	21,722	150,636	3,854	30,798	11,477	42,485	1,272	10,148	38,328	234,111
8/27	50	54	1	28	21,276	149,056	6,144	49,022	16,924	61,196	1,865	13,858	46,210	273,160
8/28	53	55	5	103	19,866	138,932	8,429	67,135	20,211	71,957	2,158	16,456	50,669	294,583
8/29	54	56	2	37	17,186	120,301	5,414	44,325	11,426	41,078	1,215	9,225	35,243	214,966
8/30	57	62	2	29	21,125	146,357	9,505	76,341	11,441	41,676	1,978	13,760	44,051	278,163
8/31	50	52	0	0	14,782	102,114	7,103	59,620	6,075	22,007	1,091	8,038	29,051	191,779
9/03	61	61	5	105	21,244	145,756	7,313	62,058	2,279	7,631	579	3,945	31,420	219,495
9/04	38	40	1	28	8,272	55,314	3,162	26,966	523	1,708	215	1,388	12,173	85,404
9/05	45	45	0	0	10,099	68,644	3,667	31,112	1,260	3,941	376	2,412	15,402	106,109
9/06	47	48	0	0	13,225	91,078	6,032	49,462	1,535	5,225	670	4,375	21,462	150,140
9/07	43	43	1	13	14,462	99,182	4,590	37,877	649	2,102	469	2,970	20,171	142,144
9/10	34	35	1	25	11,744	80,985	3,175	26,443	100	351	205	1,256	15,225	109,060
9/11	30	30	0	0	6,449	44,505	2,059	17,578	32	136	179	1,114	8,719	63,333
9/12	22	23	0	0	8,552	58,768	7,483	64,676	37	127	164	1,047	16,236	124,618
9/13	22	22	0	0	9,989	68,507	2,645	23,442	11	37	129	801	12,774	92,787
9/14	21	22	0	0	6,462	43,891	1,552	13,884	6	22	75	450	8,095	58,247
9/15	15	15	0	0	4,183	28,511	1,145	9,910	1	3	27	117	5,356	38,541
9/16	7	7	0	0	677	4,562	267	2,194	0	0	0	0	944	6,756
Total	101	5,115	5,493	111,187	1,724,357	11,524,591	281,830	2,064,636	2,065,266	7,375,820	381,202	2,816,845	4,458,148	23,893,079

^a Deliveries from the test fishery.

Table 4. Forecast and harvest comparisons in the Chignik Management Area, 1995.

	Chinook	Sockeye	Coho	Pink	Chum
Forecast	7,000	1,677,000	200,000	1,100,000	240,000
Actual	5,493	1,724,357	281,830	2,065,266	381,202
10-Yr Avg. (1986-95)	6,694	1,580,724	206,089	1,133,682	205,737

Table 5. Estimated salmon escapement by district and statistical area in the Chignik Management Area, 1995.

District	Stat Area	Chinook	Sockeye	Coho ^a	Pink ^b	Chum ^a	Total
Chignik Lagoon	271-10	4,288	686,220	874	200,521	10,825	902,528
	Total	4,288	686,220	874	200,521	10,825	902,528
Central	272-20	0	0		92,298	200	92,498
	272-30	0	0		61,400	570	61,970
	272-50	0	0		541,777	42,913	584,469
	Total	0	0		695,475	43,683	739,158
Eastern	272-60	0	6,000		173,467	61,500	240,967
	272-70	0	0		251,050	16,433	267,483
	272-72	0	0		58,000	10,000	68,000
	272-80	0	100		234,790	8,367	243,257
	272-90	0	0		445,314	7,300	452,614
	272-92	0	0		41,000	4,300	45,300
	272-96	0	100		195,667	4,850	200,617
	Total	0	6,200		1,399,288	112,750	1,518,238
Western	273-70	0	0		174,133	100	174,233
	273-72	0	0		186,167	1,200	187,367
	273-80	0	0		19,000	0	19,000
	273-82	0	0		16,491	0	16,491
	273-84	0	0		118,883	34,353	153,236
	273-94	0	0		40,000	10,000	50,000
	Total	0	0		554,674	45,653	600,327
Perryville	275-40	0	0		313,400	133,827	447,227
	275-50	0	0		247,650	700	248,350
	275-60	0	0		21,000	100	21,100
	Total	0	0		582,050	134,627	716,677
All District Total		4,288	692,420	874	3,432,008	347,538	4,476,928

^a Coho salmon estimates for Chignik Lagoon were from methods from Reggarone (1989). Coho salmon surveys were incomplete because of budget constraints.

^b Escapement estimates for pink and chum salmon were based on methods of Johnson and Barrett (1988).

Table 6. Chinook salmon runs to the Chignik River, 1960 - 1995.

Year	Escapement ^a	Commercial Catch	Total Run
1960	-	643	643
1961	-	409	409
1962	-	435	435
1963	564	1,744	2,308
1964	914	1,099	2,013
1965	942	1,592	2,534
1966	822	636	1,458
1967	1,500	882	2,382
1968	1,000	674	1,674
1969	600	3,448	4,048
1970	2,500	1,226	3,726
1971	2,000	2,010	4,010
1972	1,500	464	1,964
1973	822	525	1,347
1974	672	255	927
1975	877	549	1,426
1976	700	2,290	2,990
1977	798	710	1,508
1978	1,197	1,603	2,800
1979	1,050	1,253	2,303
1980	876	2,344	3,220
1981	1,603	2,694	4,297
1982	2,412	5,236	7,648
1983	1,943	5,488	7,431
1984	5,806	4,318	10,124
1985	3,144	1,888	5,032
1986	3,612	3,037	6,649
1987	2,624	2,651	5,275
1988	4,868	7,296	12,164
1989	3,316	3,542	6,858
1990	4,364	9,901	14,265
1991	4,545	3,157	7,702
1992	3,806	10,832	14,638
1993	1,946	19,515	21,461
1994	3,016	3,919	6,935
1995	4,288	5,493	9,781
<hr/>			
Avg (1966-95)	2,274	3,594	5,868
Avg (1976-95)	2,796	4,858	7,654
Avg (1986-95)	3,639	6,934	10,573

^a No escapement adjustments are made for chinook salmon that escape after the weir is removed, those that spawn below the weir, or those removed by the sport fishery.

Table 7. Commercial salmon catches in the Chignik Management Area by district, statistical area, and species, 1995.

District	Stat. Area	Catch by Species in Number of Salmon					Total
		Chinook	Sockeye	Coho	Pink	Chum	
Chignik Bay	27110	3,219	1,083,707	54,646	106,939	14,588	1,263,099
	Total	3,219	1,083,707	54,646	106,939	14,588	1,263,099
Central	27220	108	14,077	5,328	56,808	8,384	84,705
	27230	255	203,265	24,457	240,826	52,382	521,185
	27240	48	5,694	1,899	13,923	2,847	24,411
	27250	303	144,284	9,348	133,631	37,162	324,728
	27262	125	45,882	5,919	24,445	5,980	82,351
	Total	839	413,202	46,951	469,633	106,755	1,037,380
Eastern	27260	54	15,058	191	3,836	1,633	20,772
	27280	2	550	288	4,282	1,590	6,712
	27290	0	316	0	0	15	331
	27292	58	34,956	0	561	5,114	40,689
	Total	114	50,880	479	8,679	8,352	68,504
Western	27374	627	44,718	49,314	502,081	113,632	710,372
	27380	33	6,462	541	2,589	947	10,572
	27390	160	23,695	32,793	246,414	33,109	336,171
	27394	77	5,195	5,471	40,639	10,618	62,000
	Total	897	80,070	88,119	791,723	158,306	1,119,115
Perryville	27540	424	96,445	91,634	686,104	93,132	967,739
	27550	0	53	1	2,188	69	2,311
	Total	424	96,498	91,635	688,292	93,201	970,050
Grand Total		5,493	1,724,357	281,830	2,065,266	381,202	4,458,148

Table 8. Chignik inseason escapement schedules for Black Lake (early run) and Chignik Lake (late run).

<u>EARLY RUN - 400,000 ESCAPEMENT</u>			
June 12			40,000
June 14	50 -		65,000
June 16	75 -		00,000
June 18	125 -		150,000
June 20	175 -		200,000
June 22	225 -		250,000
June 25	275 -		325,000
June 30	350 -		400,000

<u>LATE RUN - 250,000 ESCAPEMENT</u>			
<u>EARLY ESCAPEMENT IS ACHIEVED</u>		<u>EARLY ESCAPEMENT IS NOT ACHIEVED</u>	
July 6	-		40,000
July 8	-	45 -	50,000
July 10	40,000	55 -	65,000
July 12	50 - 60,000	70 -	75,000
July 14	65 - 75,000	75 -	80,000
July 16	80 - 90,000	80 -	90,000
July 19	100 - 115,000	100 -	115,000
July 21	125 - 135,000	125 -	135,000
July 23	145 - 160,000	150 -	160,000
July 26	170 - 180,000	170 -	180,000
July 29	185 - 195,000	190 -	195,000
July 31	195 - 200,000	195 -	200,000

Table 9. Preliminary Chignik Lagoon sockeye salmon age composition as determined from commercial fishery scale samples, 1995.

Date	Sample Size (n)	Sockeye Age Composition												
		1.3	2.3	1.2	2.2	3.2	1.4	1.1	2.4	0.4	0.2	0.1	2.1	3.3
6/08	545	50.8	19.1	11.4	18.0	0.0	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.0
6/13	514	51.9	18.1	11.9	16.1	0.2	0.8	0.0	0.0	0.0	0.2	0.6	0.0	0.2
6/20	514	58.4	12.8	11.9	15.6	0.0	0.8	0.0	0.0	0.0	0.4	0.2	0.0	0.0
6/25	237	51.9	15.2	9.3	22.8	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.4
6/30	237	37.4	18.5	13.2	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0
7/03	514	33.3	30.5	9.3	26.1	0.0	0.2	0.2	0.0	0.0	0.0	0.4	0.0	0.0
7/06	236	29.7	43.6	8.9	16.5	0.0	0.8	0.0	0.4	0.0	0.0	0.0	0.0	0.0
7/08	384	27.3	46.1	9.4	15.4	0.3	0.5	0.0	0.5	0.0	0.0	0.3	0.0	0.3
7/14	338	21.6	62.7	7.7	7.4	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
7/20	503	29.4	58.3	5.4	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
7/27	491	17.3	66.6	5.7	9.2	0.6	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.2
8/04	497	6.2	75.5	5.0	9.7	1.6	0.4	0.0	0.4	0.2	0.0	0.0	0.4	0.6
8/10	473	3.6	86.5	0.8	3.8	1.9	0.2	0.0	1.9	0.0	0.0	0.0	0.2	1.1

Table 10. Black Lake, Chignik Lake, and combined total run estimates of sockeye salmon defined by catch and escapement, based on scale pattern analysis, 1954-1994.

Year	Black Lake			Chignik Lake			Combined		
	Catch	Escapement	Total	Catch	Escapement	Total	Catch	Escapement	Run
1954	72,334	184,953	257,287	19,232	277,912	297,144	91,566	462,865	554,431
1955	179,539	256,757	436,296	168,987	201,409	370,396	348,526	458,166	806,692
1956	246,442	289,096	535,538	421,251	483,024	904,275	667,693	772,120	1,439,813
1957	77,423	192,479	269,902	224,757	328,779	553,536	302,180	521,258	823,438
1958	141,180	120,862	262,042	179,949	212,594	392,543	321,129	333,456	654,585
1959	165,000	112,226	277,226	251,547	308,645	560,192	416,547	420,871	837,418
1960	274,048	251,567	525,615	418,356	357,230	775,586	692,404	608,797	1,301,201
1961	53,852	140,714	194,566	278,609	254,970	533,579	332,461	395,684	728,145
1962	71,562	167,602	239,164	292,528	324,860	617,388	364,090	492,462	856,552
1963	80,258	332,536	412,794	323,080	200,314	523,394	403,338	532,850	936,188
1964	142,380	137,073	279,453	472,510	166,625	639,135	614,890	303,698	918,588
1965	497,018	307,192	804,210	169,576	163,151	332,727	666,594	470,343	1,136,937
1966	87,169	383,545	470,714	162,638	183,525	346,163	249,807	567,070	816,877
1967	154,134	328,000	482,134	350,901	189,000	539,901	505,035	517,000	1,022,035
1968	542,598	342,343	884,941	641,693	244,836	886,529	1,184,291	587,179	1,771,470
1969	263,170	366,589	629,759	235,960	132,055	368,015	499,130	498,644	997,774
1970	1,566,065	536,257	2,102,322	255,338	119,952	375,290	1,821,403	656,209	2,477,612
1971	555,832	671,668	1,227,500	764,300	232,501	996,801	1,320,132	904,169	2,224,301
1972	43,220	326,320	369,540	395,461	231,270	626,731	438,681	557,590	996,271
1973	569,854	533,047	1,102,901	395,862	247,144	643,006	965,716	780,191	1,745,907
1974	174,883	351,701	526,584	624,568	364,612	989,180	799,451	716,313	1,515,764
1975	4,019	308,914	312,933	421,414	314,084	735,498	425,433	622,998	1,048,431
1976	548,107	551,254	1,099,361	778,380	341,828	1,120,208	1,326,487	893,082	2,219,569
1977	439,693	482,247	921,940	1,696,767	463,561	2,160,328	2,136,460	945,808	3,082,268
1978	1,070,487	458,660	1,529,147	754,903	263,009	1,017,912	1,825,390	721,669	2,547,059
1979	207,122	385,694	592,816	944,964	317,889	1,262,853	1,152,086	703,583	1,855,669
1980	170,629	311,332	481,961	778,014	279,729	1,057,743	948,643	591,061	1,539,704
1981	779,755	438,540	1,218,295	1,509,574	301,092	1,810,666	2,289,329	739,632	3,028,961
1982	1,325,041	616,117	1,941,158	450,778	305,193	755,971	1,775,819	921,310	2,697,129
1983	977,548	426,177	1,403,725	1,467,060	441,561	1,908,621	2,444,608	867,738	3,312,346
1984	3,245,482	597,712	3,843,194	352,988	268,496	621,484	3,598,470	866,208	4,464,678
1985	650,340	377,516	1,027,856	490,151	369,262	859,413	1,140,491	746,773	1,887,269
1986	1,371,935	566,088	1,938,023	609,081	207,231	816,312	1,981,016	773,319	2,754,335

-Continued-

Table 10. (page 2 of 2)

Year	Black Lake			Chignik Lake			Combined		
	Catch	Escapement	Total	Catch	Escapement	Total	Catch	Escapement	Run
1987	1,949,867	589,291	2,539,158	481,376	214,452	695,828	2,431,243	803,743	3,234,986
1988	272,553	420,577	693,131	630,070	255,180	885,250	902,623	675,757	1,578,380
1989	234,839	384,004	618,843	1,063,015	557,171	1,620,186	1,297,854	941,175	2,239,029
1990	587,818	434,543	1,022,361	1,855,182	335,867	2,191,049	2,443,000	770,410	3,213,410
1991	1,714,835	657,511	2,372,346	751,291	382,587	1,133,878	2,466,126	1,040,098	3,506,224
1992	747,829	360,681	1,108,510	863,650	405,922	1,269,572	1,611,479	766,603	2,378,082
1993	926,863	364,263	1,291,126	1,322,984	333,114	1,656,098	2,249,847	697,377	2,947,224
1994 ^a	1,616,225	766,909	2,383,134	487,140	200,000	687,140	2,103,365	966,909	3,070,274
Averages									
84-94	1,007,310	492,138	1,499,449	855,742	326,079	1,181,821	1,863,053	818,217	2,681,270
74-93	942,049	474,902	1,416,951	885,687	327,861	1,213,549	1,827,737	802,763	2,630,500
64-93	776,498	454,823	1,231,321	723,476	288,842	1,012,319	1,499,974	743,666	2,243,639

^a Allocation to each stock may change slightly as advances in software come on line.

Table 11. Sockeye salmon escapements through the Chignik River weir for Chignik Lake and Black Lake using daily percentages from the inseason scale pattern analysis time of entry, 1995.

Date	Total		Percent	Chignik Lake		Black Lake
	Daily	Cumulative		Daily	Cumulative	Cumulative
01-Jun	127	127	1.9	2	2	125
02-Jun	335	462	1.9	6	8	454
03-Jun	1,489	1,951	1.9	28	36	1,915
04-Jun	1,106	3,057	2.0	22	58	2,999
05-Jun	1,308	4,365	2.0	27	85	4,280
06-Jun	3,681	8,046	2.1	76	161	7,885
07-Jun	12,912	20,958	2.1	271	432	20,526
08-Jun	8,914	29,872	2.1	189	621	29,251
09-Jun	14,873	44,745	2.2	321	942	43,803
10-Jun	22,204	66,949	2.2	485	1,427	65,522
11-Jun	22,847	89,796	2.2	506	1,933	87,863
12-Jun	6,238	96,034	2.2	140	2,073	93,961
13-Jun	3,158	99,192	2.3	72	2,145	97,047
14-Jun	3,674	102,866	2.3	85	2,230	100,636
15-Jun	5,389	108,255	2.3	126	2,356	105,899
16-Jun	6,156	114,411	2.4	146	2,502	111,909
17-Jun	6,213	120,624	2.4	149	2,651	117,973
18-Jun	13,439	134,063	2.4	326	2,977	131,086
19-Jun	24,033	158,096	2.5	590	3,567	154,529
20-Jun	36,537	194,633	3.8	1,372	4,939	189,694
21-Jun	31,284	225,917	5.1	1,581	6,520	219,397
22-Jun	2,646	228,563	6.9	181	6,701	221,862
23-Jun	16,111	244,674	8.7	1,394	8,095	236,579
24-Jun	39,313	283,987	10.5	4,110	12,205	271,782
25-Jun	7,683	291,670	12.3	942	13,147	278,523
26-Jun	4,542	296,212	13.9	633	13,780	282,432
27-Jun	20,509	316,721	17.5	3,598	17,378	299,343
28-Jun	26,738	343,459	21.1	5,654	23,032	320,427
29-Jun	17,924	361,383	24.7	4,435	27,467	333,916
30-Jun	17,570	378,953	28.3	4,980	32,447	346,506
01-Jul	23,025	401,978	31.7	7,310	39,757	362,221
02-Jul	24,478	426,456	37.1	9,093	48,850	377,606
03-Jul	19,476	445,932	42.5	8,286	57,136	388,796
04-Jul	3,963	449,895	48.0	1,902	59,038	390,857
05-Jul	2,980	452,875	53.1	1,582	60,620	392,255
06-Jul	1,295	454,170	58.2	754	61,374	392,796
07-Jul	1,322	455,492	63.3	837	62,211	393,281
08-Jul	805	456,297	68.4	551	62,762	393,535
09-Jul	1,075	457,372	73.5	790	63,552	393,820
10-Jul	1,978	459,350	78.6	1,555	65,107	394,243
11-Jul	2,080	461,430	80.4	1,672	66,779	394,651
12-Jul	7,056	468,486	84.1	5,934	72,713	395,773
13-Jul	25,901	494,387	87.8	22,741	95,454	398,933
14-Jul	24,158	518,545	88.9	21,476	116,930	401,615
15-Jul	18,007	536,552	90.0	16,206	133,136	403,416
16-Jul	4,061	540,613	91.1	3,700	136,836	403,777
17-Jul	1,541	542,154	92.2	1,421	138,257	403,897
18-Jul	3,379	545,533	93.3	3,153	141,410	404,123
19-Jul	11,076	556,609	94.4	10,456	151,866	404,743
20-Jul	20,831	577,440	96.5	20,102	171,968	405,472

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Table 11. (age 2 of 2)

Date	Total		Percent	Chignik Lake		Black Lake
	Daily	Cumulative		Daily	Cumulative	Cumulative
21-Jul	7,331	584,771	97.6	7,155	179,123	405,648
22-Jul	987	585,758	98.7	974	180,097	405,661
23-Jul	1,513	587,271	99.8	1,510	181,607	405,664
24-Jul	1,226	588,497	100.0	1,226	182,833	405,664
25-Jul	2,441	590,938	100.0	2,441	185,274	405,664
26-Jul	4,154	595,092	100.0	4,154	189,428	405,664
27-Jul	15,284	610,376	100.0	15,284	204,712	405,664
28-Jul	13,799	624,175	100.0	13,799	218,511	405,664
29-Jul	1,949	626,124	100.0	1,949	220,460	405,664
30-Jul	1,023	627,147	100.0	1,023	221,483	405,664
31-Jul	438	627,585	100.0	438	221,921	405,664
01-Aug	2,108	629,693	100.0	2,108	224,029	405,664
02-Aug	677	630,370	100.0	677	224,706	405,664
03-Aug	1,009	631,379	100.0	1,009	225,715	405,664
04-Aug	4,456	635,835	100.0	4,456	230,171	405,664
05-Aug	3,280	639,115	100.0	3,280	233,451	405,664
06-Aug	1,539	640,654	100.0	1,539	234,990	405,664
07-Aug	1,374	642,028	100.0	1,374	236,364	405,664
08-Aug	1,115	643,143	100.0	1,115	237,479	405,664
09-Aug	1,488	644,631	100.0	1,488	238,967	405,664
10-Aug	1,910	646,541	100.0	1,910	240,877	405,664
11-Aug	1,393	647,934	100.0	1,393	242,270	405,664
12-Aug	1,308	649,242	100.0	1,308	243,578	405,664
13-Aug	4,551	653,793	100.0	4,551	248,129	405,664
14-Aug	7,564	661,357	100.0	7,564	255,693	405,664
15-Aug	7,825	669,182	100.0	7,825	263,518	405,664
16-Aug	3,071	672,253	100.0	3,071	266,589	405,664
17-Aug	1,918	674,171	100.0	1,918	268,507	405,664
18-Aug	2,465	676,636	100.0	2,465	270,972	405,664
19-Aug	626	677,262	100.0	626	271,598	405,664
20-Aug	1,317	678,579	100.0	1,317	272,915	405,664
21-Aug	3,075	681,654	100.0	3,075	275,990	405,664
22-Aug	1,913	683,567	100.0	1,913	277,903	405,664
23-Aug	1,139	684,706	100.0	1,139	279,042	405,664
24-Aug	1,314	686,020	100.0	1,314	280,356	405,664

Table 12. Pink salmon return per spawner in the Central and Eastern Districts within the Chignik Management Area, 1962-1995.^{a,b}

Even Year Cycle				Odd Year Cycle			
Brood Year	Pink Escapement	Return 2-yrs Later	Return/ Spawner	Brood Year	Pink Escapement	Return 2-yrs Later	Return/ Spawner
1962	485,600	2,060,200	4.2	1963	218,800	225,800	1.0
1964	736,800	768,400	1.0	1965	130,600	123,200	0.9
1966	364,800	1,025,200	2.8	1967	74,600	118,700	1.6
1968	456,400	559,800	1.2	1969	115,600	147,300	1.3
1970	262,400	32,700	0.1	1971	97,800	65,800	0.7
1972	19,000	108,700	5.7	1973	63,000	81,200	1.3
1974	86,000	340,200	4.0	1975	49,900	396,100	7.9
1976	294,800	558,500	1.9	1977	275,900	1,068,100	3.8
1978	410,500	1,106,100	2.7	1979	491,300	614,500	1.3
1980	524,900	497,300	0.9	1981	231,200	73,000	0.3
1982	327,600	685,500	2.1	1983	57,300	242,200	4.2
1984	580,500	796,300	1.4	1985	219,500	291,200	1.3
1986	702,600	2,546,600	3.6	1987	281,300	1,096,000	3.9
1988	1,221,800	1,217,600	1.0	1989	1,096,000	528,100	0.5
1990	943,300	1,930,700	2.0	1991	326,100	943,400	2.9
1992	1,541,900	1,136,000	0.7	1993	685,600	2,573,075	3.8
1994	1,005,927			1995	2,094,763		

Table 13. Pink salmon return per spawner in the Western and Perryville Districts within the Chignik Management Area, 1962-1995.^{a,b}

Even Year Cycle				Odd Year Cycle			
Brood Year	Pink Escapement	Return 2-yrs Later	Return/Spawner	Brood Year	Pink Escapement	Return 2-yrs Later	Return/Spawner
1962	397,500	472,500	1.2	1963	467,000	1,225,400	2.6
1964	237,000	530,700	2.2	1965	234,600	292,000	1.2
1966	269,300	771,700	2.9	1967	259,700	2,387,800	9.2
1968	280,000	1,088,700	3.9	1969	640,600	811,300	1.3
1970	274,600	43,300	0.2	1971	313,800	93,900	0.3
1972	16,400	151,000	9.2	1973	93,900	194,400	2.1
1974	137,600	444,500	3.2	1975	187,000	894,500	4.8
1976	203,500	1,191,000	5.9	1977	470,900	1,382,300	2.9
1978	490,900	545,400	1.1	1979	366,300	1,023,200	2.8
1980	214,300	680,000	3.2	1981	365,300	378,700	1.0
1982	59,300	472,400	8.0	1983	100,500	425,800	4.2
1984	297,800	586,400	2.0	1985	302,700	327,000	1.1
1986	224,300	1,966,300	8.8	1987	104,000	325,300	3.1
1988	413,700	313,900	0.8	1989	325,300	1,331,500	4.1
1990	132,700	1,216,300	9.2	1991	440,300	1,828,800	4.2
1992	229,200	529,500	2.3	1993	494,200	2,616,739	5.3
1994	275,948			1995	1,136,724		

^a Post 1984 escapement estimates computed by area-under-the-curve methodology using a 15.0 day average stream life (Johnson and Barrett 1988).

^b Catches (1970-1995) were updated using historical electronic fish ticket databases.

Table 14. Chum salmon return per spawner in the Central and Eastern Districts within the Chignik Management Area, 1962-1995.^{a,b}

Brood Year	Chum Escapement	Return 4-yrs Later	Return/ Spawner	Brood Year	Chum Escapement	Return 4-yrs Later	Return/ Spawner
1962	120,000	219,000	1.8	1979	124,300	85,300	0.7
1963	89,200	141,300	1.6	1980	141,200	279,400	2.0
1964	189,600	191,800	1.0	1981	152,100	20,600	0.1
1965	77,200	79,900	1.0	1982	194,800	86,900	0.4
1966	68,000	149,400	2.2	1983	67,200	74,100	1.1
1967	107,000	364,400	3.4	1984	250,100	194,500	0.8
1968	77,500	150,900	2.0	1985	14,500	109,000	7.5
1969	73,000	72,700	1.0	1986	39,500	308,900	7.8
1970	149,400	108,700	0.7	1987	55,800	144,700	2.6
1971	248,300	63,300	0.3	1988	277,700	586,700	2.1
1972	121,600	153,500	1.3	1989	109,000	239,000	2.2
1973	71,300	74,200	1.0	1990	167,700	290,600	1.7
1974	94,400	97,400	1.0	1991	88,400	271,540	3.1
1975	60,100	171,800	2.9	1992	480,000		
1976	140,100	236,900	1.7	1993	174,600		
1977	63,800	421,500	6.6	1994	256,700		
1978	69,600	293,000	4.2	1995	156,433		

Table 15. Chum salmon return per spawner in the Western and Perryville Districts within the Chignik Management Area, 1962-1995.^{a,b}

Brood Year	Chum Escapement	Return 4-yrs Later	Return/ Spawner	Brood Year	Chum Escapement	Return 4-yrs Later	Return/ Spawner
1962	93,600	114,100	1.2	1979	55,300	152,900	2.8
1963	17,000	65,000	3.8	1980	85,600	145,700	1.7
1964	63,000	115,500	1.8	1981	89,600	59,300	0.7
1965	32,000	86,500	2.7	1982	59,000	124,100	2.1
1966	32,400	228,600	7.1	1983	28,300	133,300	4.7
1967	29,700	432,500	14.6	1984	119,800	212,700	1.8
1968	11,400	101,300	8.9	1985	47,500	23,300	0.5
1969	28,600	44,900	1.6	1986	13,000	201,900	15.5
1970	62,700	55,100	0.9	1987	29,500	568,500	19.3
1971	214,100	64,700	0.3	1988	68,800	196,300	2.9
1972	70,500	112,700	1.6	1989	23,300	130,600	5.6
1973	44,900	177,200	3.9	1990	84,600	277,200	3.3
1974	51,900	110,700	2.1	1991	381,300	431,787	1.1
1975	63,900	164,500	2.6	1992	93,600		
1976	63,900	222,500	3.5	1993	80,800		
1977	85,800	362,500	4.2	1994	143,100		
1978	32,600	334,900	10.3	1995	180,280		

^a Post 1984 escapement estimates computed by area-under-the-curve methodology using a 15.0 day average stream life (Johnson and Barrett 1988).

^b Catches (1970-1995) were updated using historical electronic fish ticket databases.

Table 16. Subsistence harvest of salmon in the Chignik Management Area, 1976-1994.^a

Year	Subsistence Harvest					Total
	Chinook	Sockeye	Coho	Pink	Chum	
1976	100	6,000	1,500	500	150	8,250
1977	50	9,700	2,400	1,800	600	14,550
1978	50	6,000	500	2,100	600	9,250
1979	14	7,750	34	262	0	8,060
1980	6	12,475	32	478	169	13,160
1981	0	2,049	0	0	0	2,049
1982	3	8,532	12	2	0	8,548
1983	0	3,078	1,319	1,250	850	8,497
1984	23	8,747	464	330	204	9,768
1985	1	7,177	50	26	25	7,279
1986	4	10,347	205	98	77	10,730
1987	10	7,021	278	204	261	7,774
1988	9	9,073	1,455	54	142	10,733
1989	11	4,005	314	62	144	4,537
1990	147	10,822	264	586	147	11,966
1991	42	11,483	13	275	81	11,893
1992	55	8,648	709	305	145	9,862
1993	115	12,486	3,592	1,232	618	18,044
1994	165	13,978	4,055	1,720	382	20,300
1985-1994						
Average	56	9,504	1,094	456	202	11,312

^a Subsistence harvests are estimated by expanding results of returned permits to total number of permits issued.

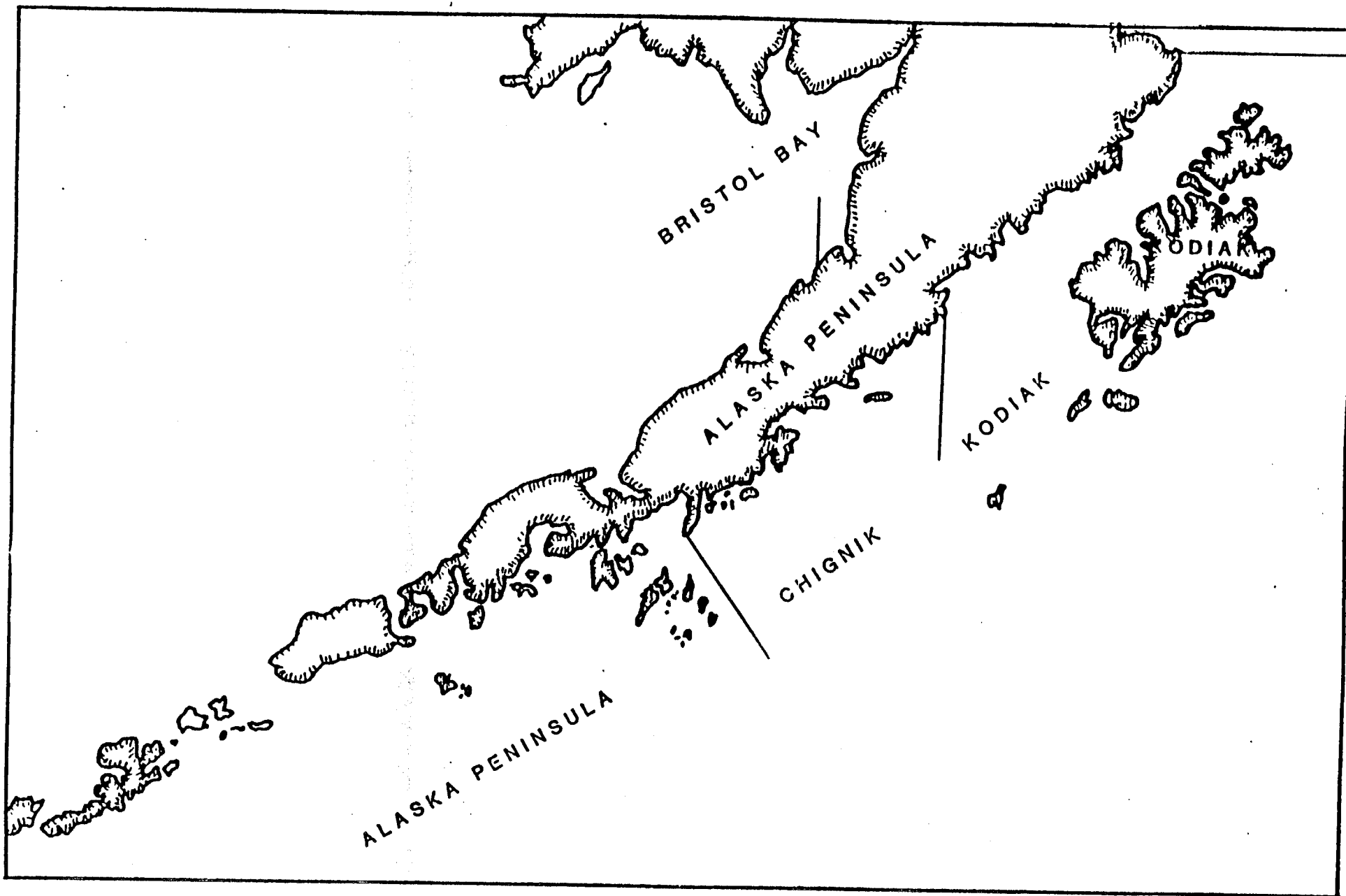


Figure 1. Map of the Alaska Peninsula illustrating the relative location of the Chignik Management Area.

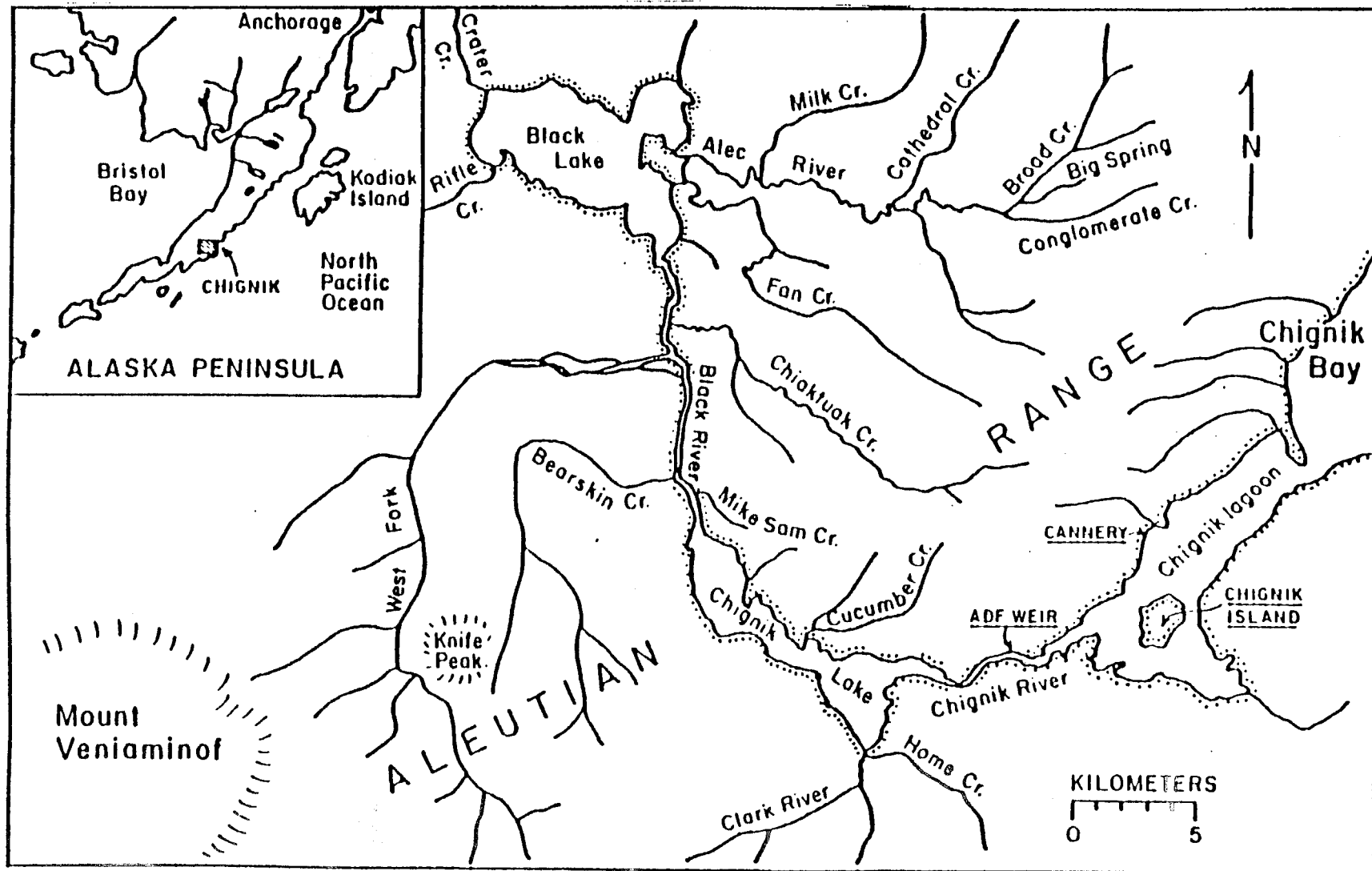


Figure 2. Chignik Lakes watershed with inset of western Alaska, 1995.

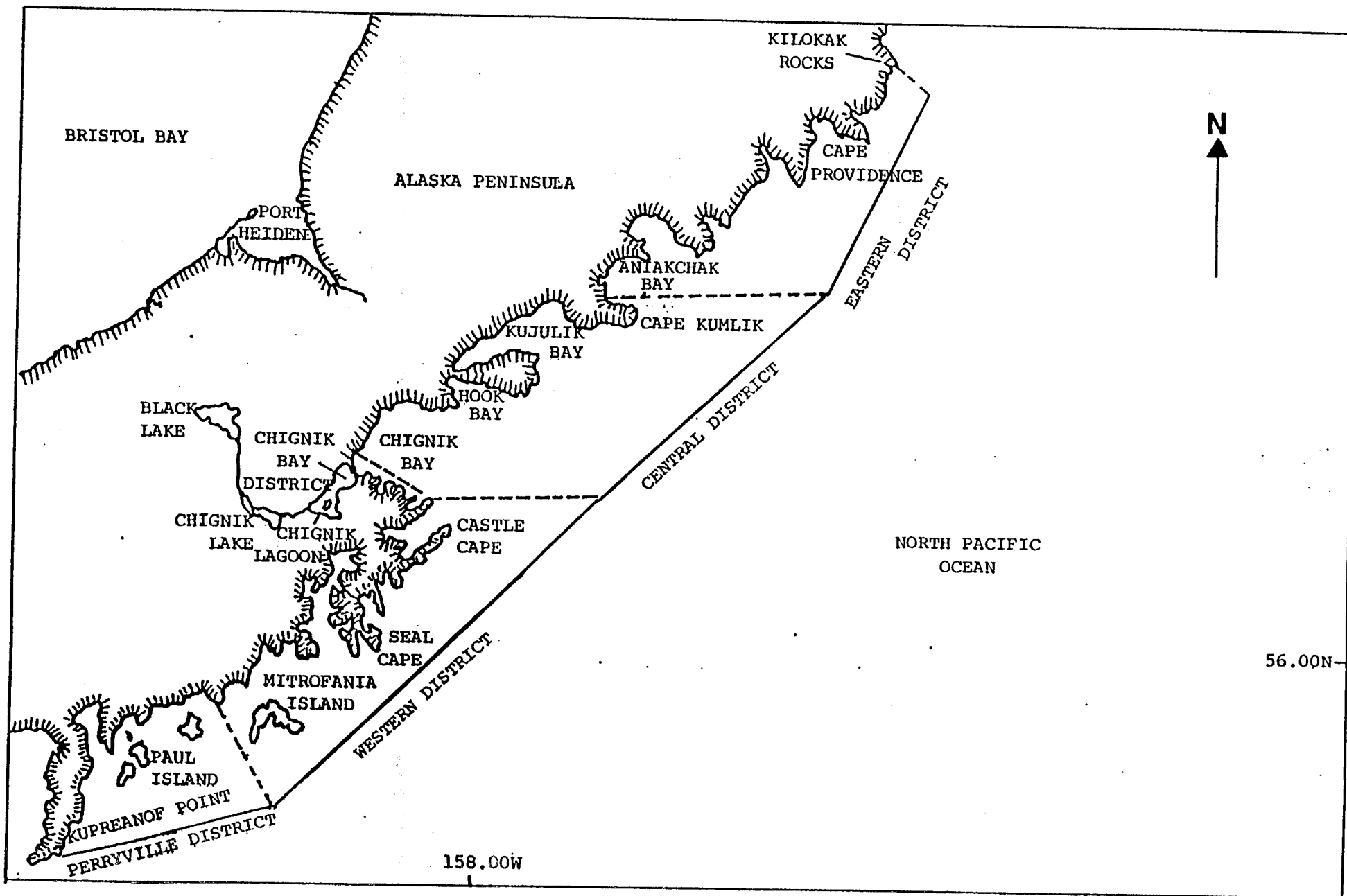


Figure 3. Map of the Chignik Management Area illustrating district boundaries, 1995

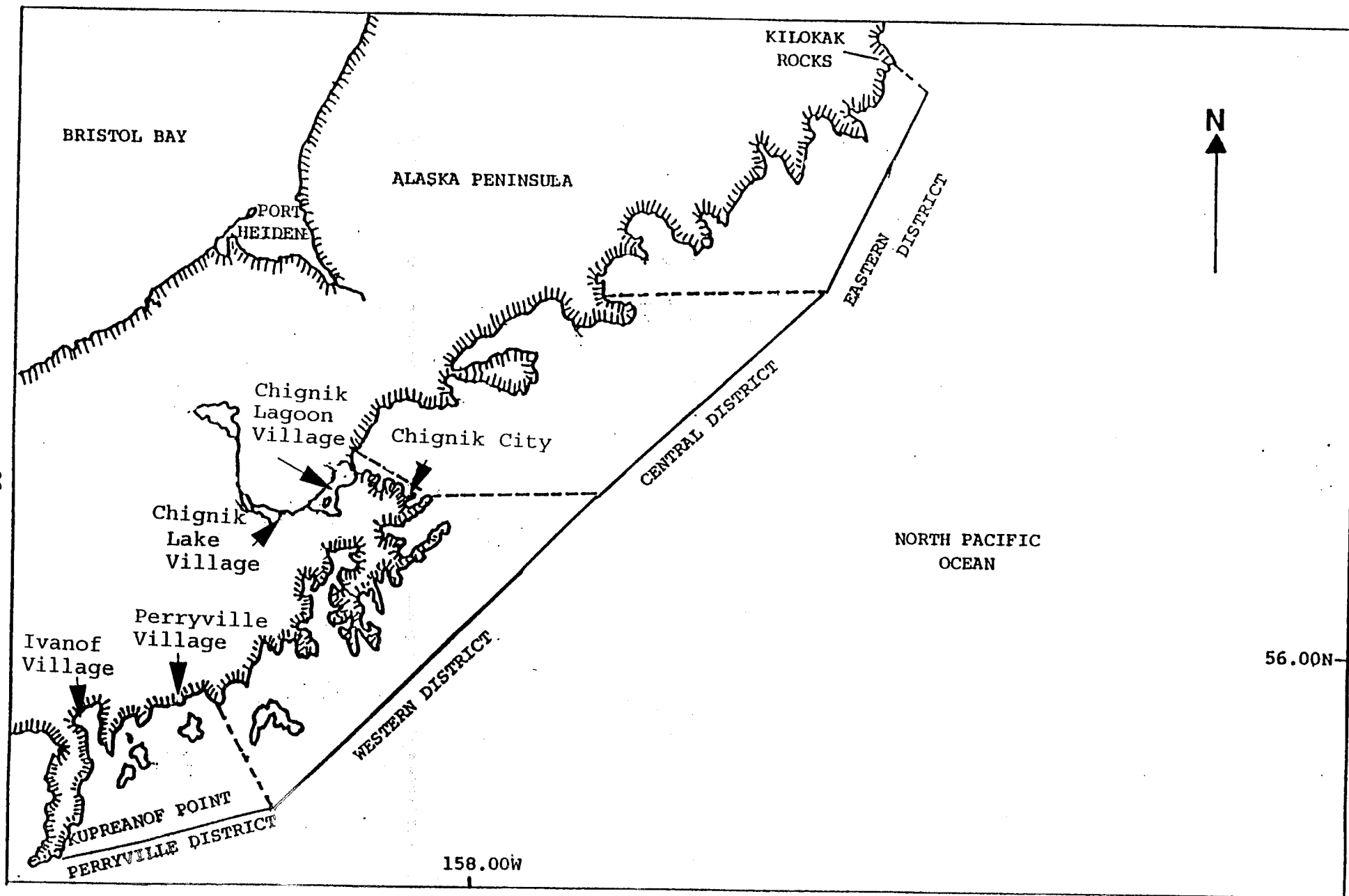


Figure 4. Map of the Chignik Management Area illustrating district boundaries, 1995

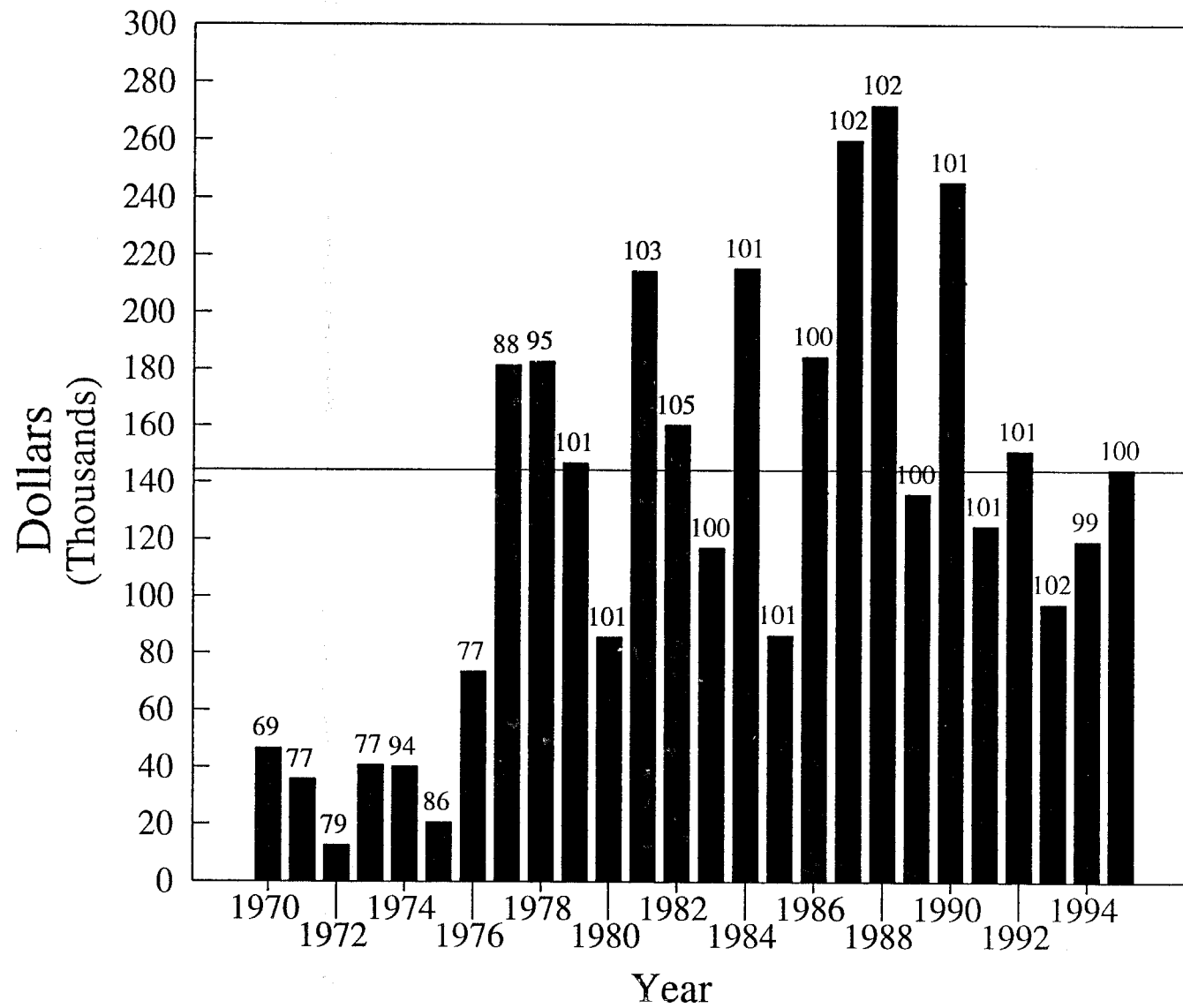


Figure 5. Average economic value of Chignik salmon per permit holder, 1970-95. Number above bar represents the number of permits fished that year.

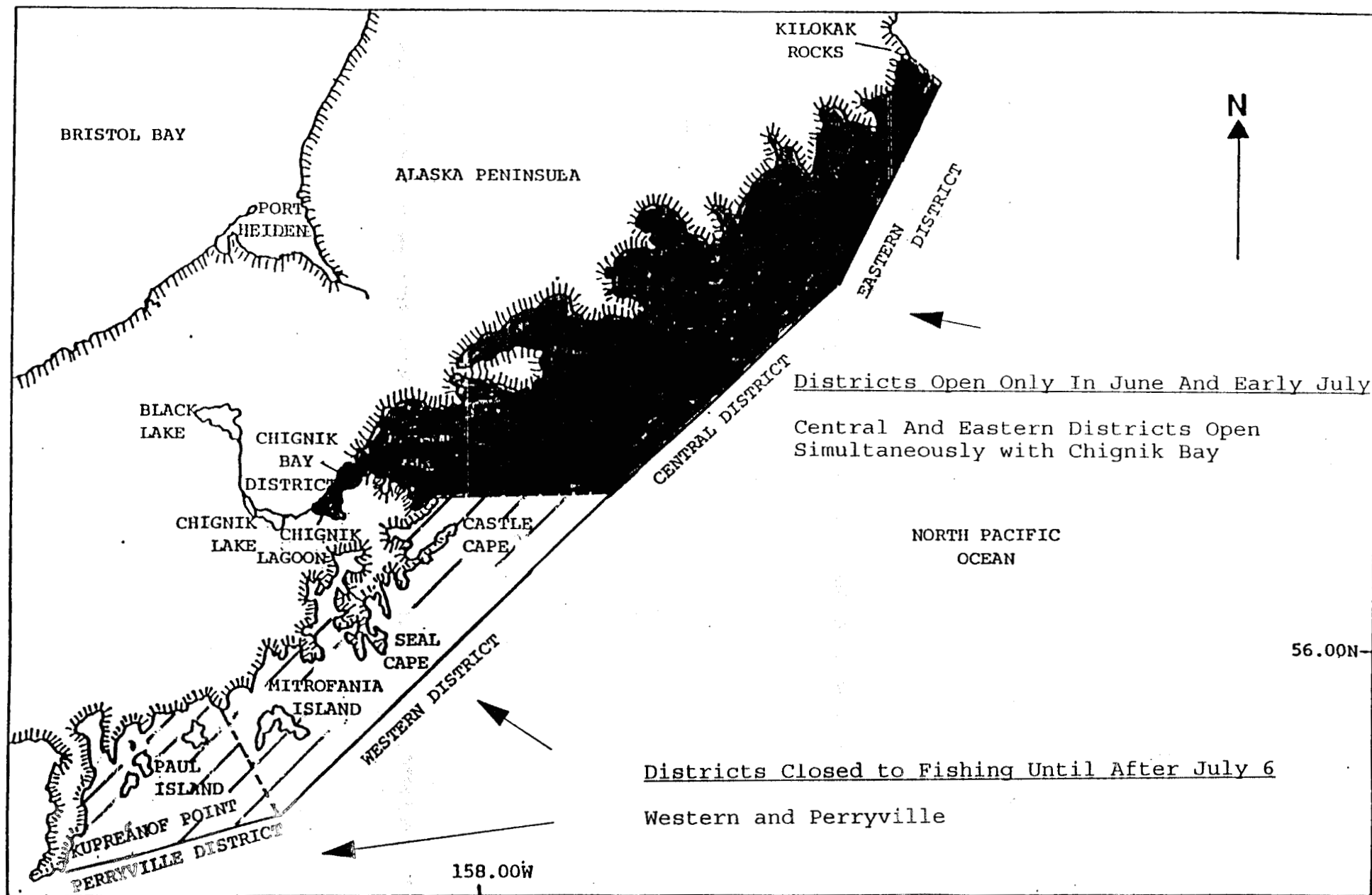


Figure 6. Map of the Chignik Management Area illustrating district boundaries, 1995.

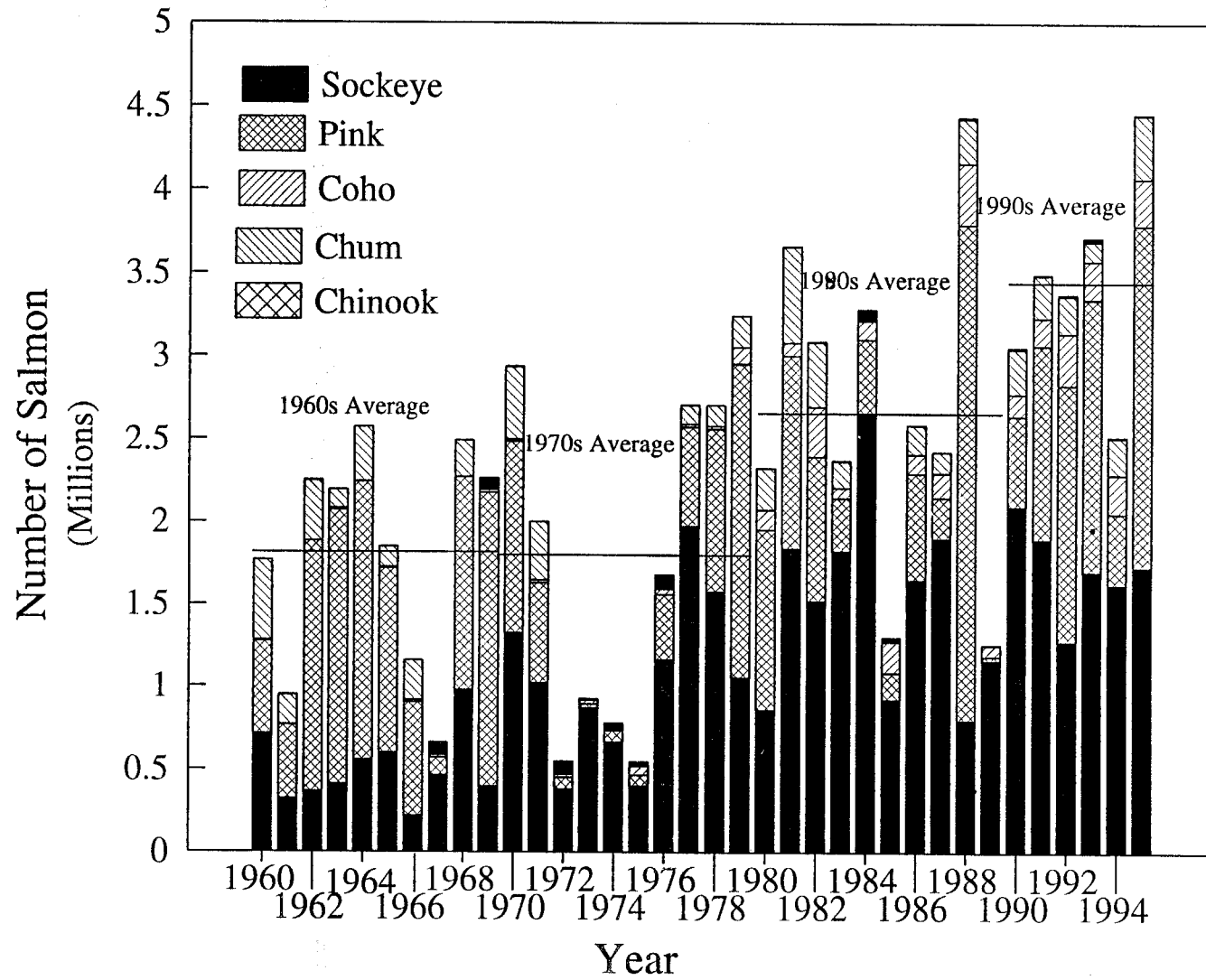


Figure 7. Total commercial salmon harvests by species in the Chignik Management Area, 1960 - 1995.

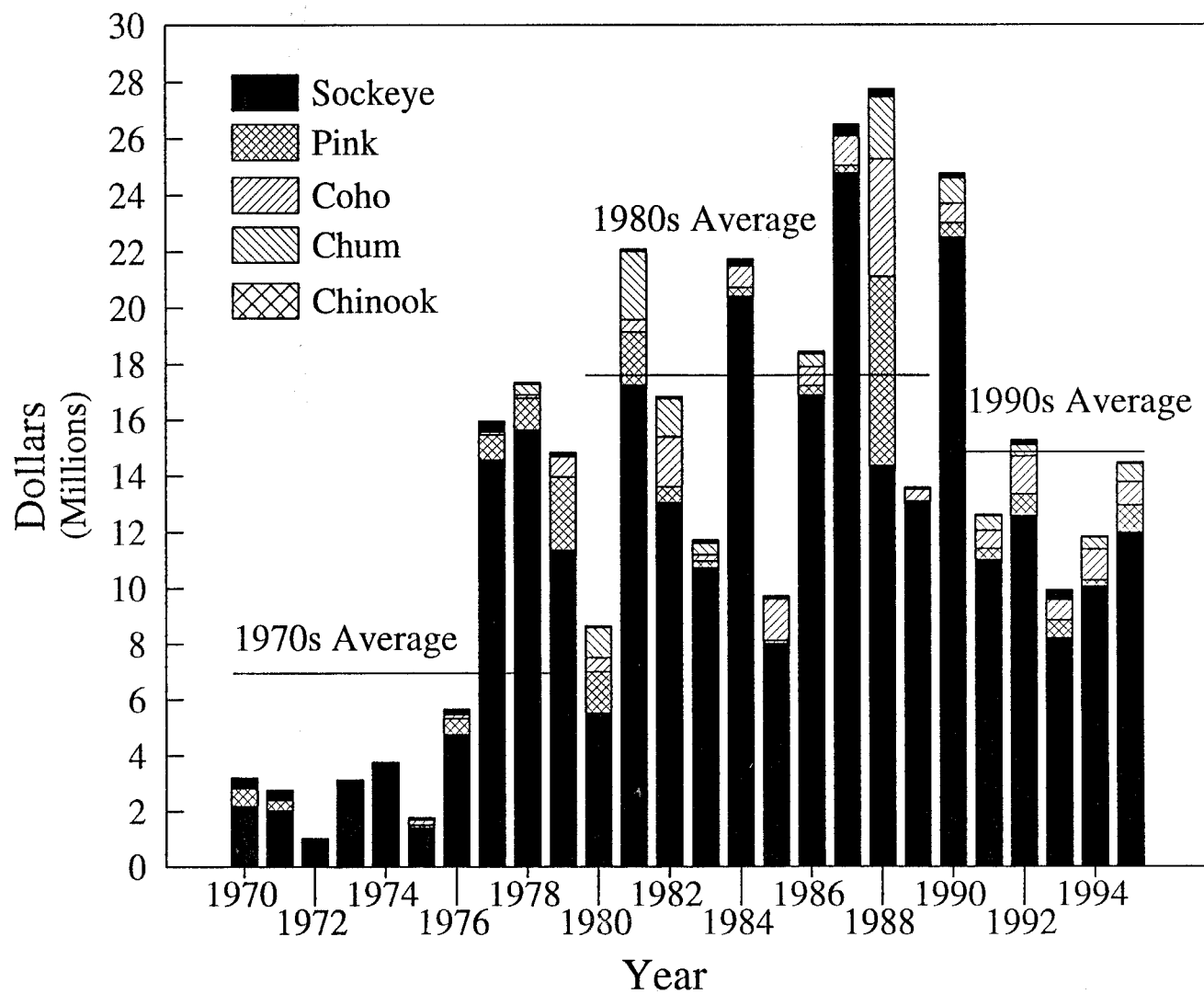


Figure 8. Total exvessel value of the commercial salmon harvest for the Chignik Management Area, 1970 - 1995.

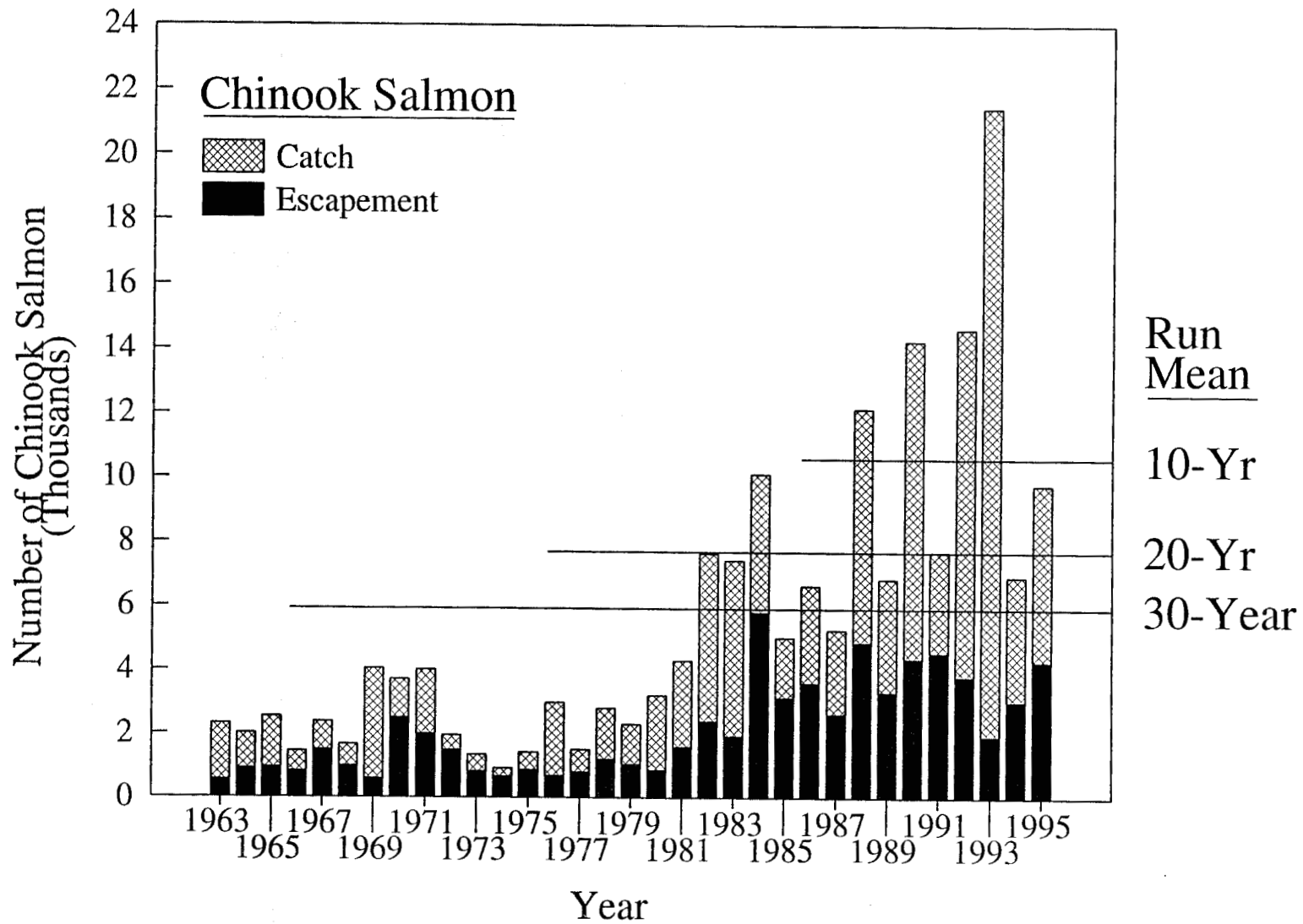


Figure 9. Chinook salmon catch and escapement in the Chignik Management Area, 1963 - 1995.

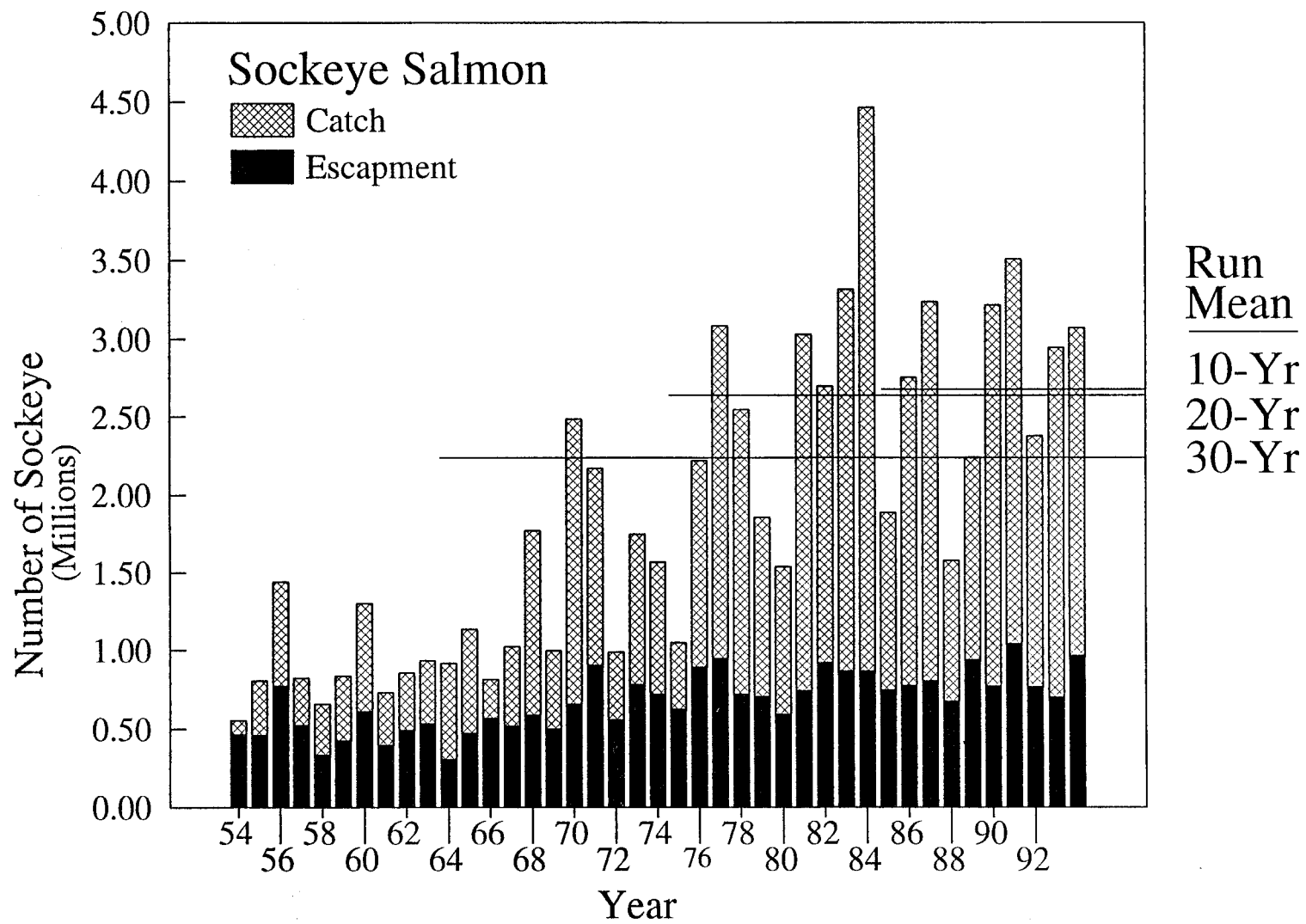


Figure 10. Sockeye salmon catch escapement in the Chignik Management Area, 1954 - 1994.

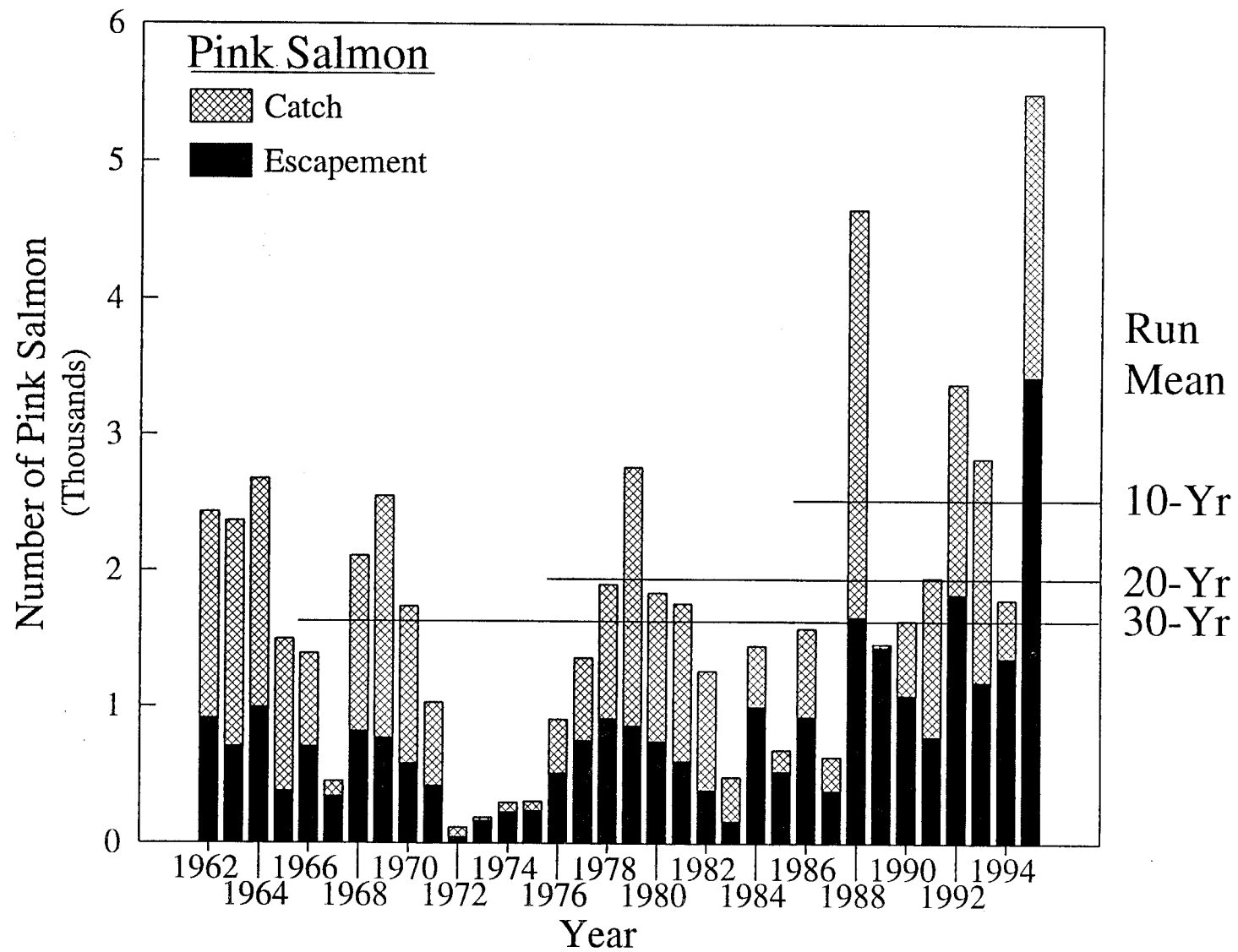


Figure 11. Pink salmon catch and escapement in the Chignik Management Area, 1962 - 1995.

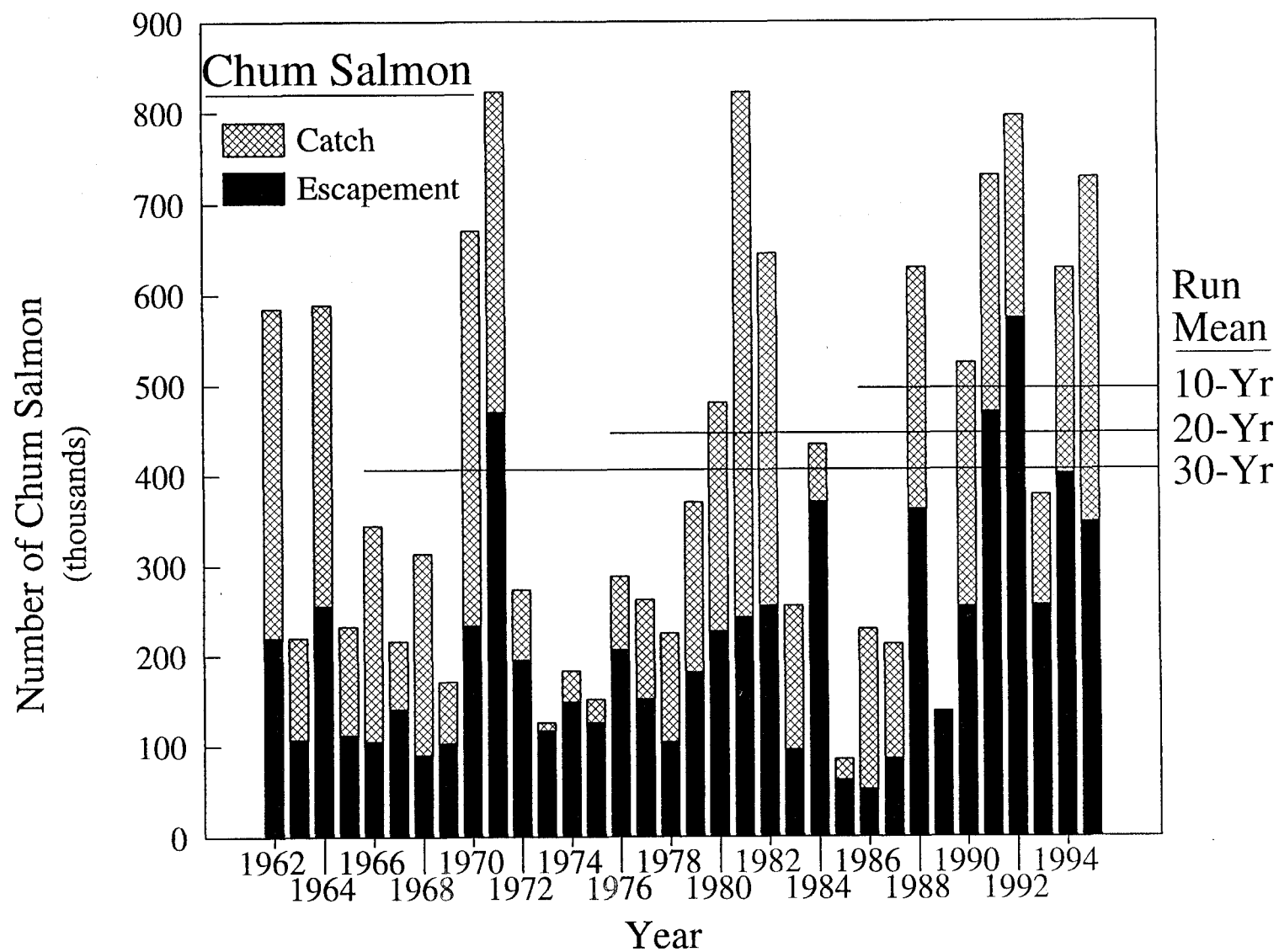


Figure 12. Chum salmon catch and escapement in the Chignik Management Area, 1962 - 1995.

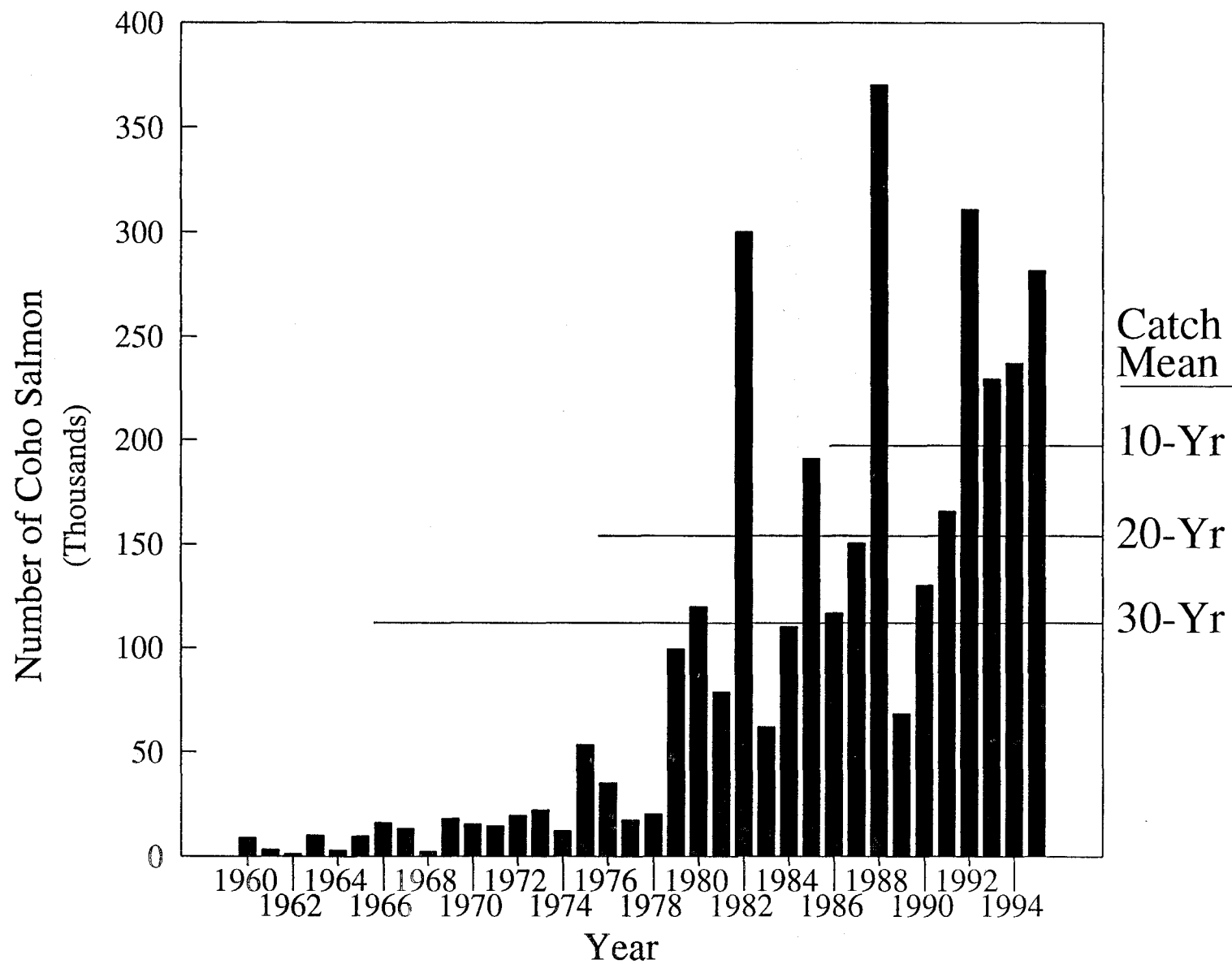


Figure 13. Coho salmon catch in the Chignik Management Area, 1960 - 1995.

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